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ABSTRACT

This booklet comprises the eighth grade component of a series of curriculum guides on fire and burn prevention. Designed to meet the age-specific needs of eighth grade students, its objectives include: (1) focusing on technical aspects of fire hazards and detection, and (2) exploring fire hazards outside the home. Texas essential elements of instruction that may appropriately be integrated with the fire prevention curriculum are listed. The booklet's three sections provide lesson plans, teacher materials, and student materials. The five lessons are: "Applying Fire Science"; "At the Workplace/Sprinklers"; "Smoke Alarms"; "Outdoor Fire Safety"; and "Accepting My Safety Job." Each lesson plan includes objectives; a list of materials; and suggestions for a focus activity, presentation of content, guided and independent practice, reteaching, enrichment, and closure. A pretest/posttest is provided, along with activity sheets to be photocopied. A scope and sequence chart covering kindergarten through high school is also presented. (JDD)

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Fire Safety for Texans

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Fire and Burn Prevention Curriculum Guide Developed by Texas Commission on Fire Protection

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Eighth Grade

Fire Safety's My Job

SB035383

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Texas Commission on Fire Protection
P.O. Box 2286 Austin, TX 78768-2286 (512) 918-7100 FAX (512) 918-7107

Dear Educator:

The Texas Commission on Fire Protection is pleased to provide this curriculum guide to facilitate the teaching of fire prevention. To understand why instruction in fire prevention must be matched to the developmental needs of students, please read the Introduction section beginning on Page 3. This introduction also tells how fire prevention education can be coordinated with the instructional requirements of Texas schools.

We welcome your comments and suggestions. Please telephone or write to share your successes and questions with our staff. Also, we invite you to request guides for other grade levels and additional copies of this booklet by clipping and returning the form below.

Your involvement in fire prevention education will be appreciated by your students and your entire community.

Sincerely,

Anne Easterling
Program Administrator
Fire Prevention Education

✂ ----------

Please send the following curriculum guide(s):

Grade Level	Quantity	Grade Level	Quantity	Grade Level	Quantity
Kindergarten		Fourth Grade		Seventh Grade	
First Grade		Fifth Grade		Eighth Grade	
Second Grade		Sixth Grade		High School Health	
Third Grade				High School Economics	

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Fire Safety for Texans

Fire and Burn Prevention
Curriculum Guide Developed by
Texas Commission on Fire Protection

Eighth Grade

Fire Safety's My Job

Published June 1993
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Fire Safety for Texans

The complete series from the Texas Commission on Fire Protection

Kindergarten
Fire Safe Together

First Grade
Fire Safety: Any Time, Any Place

Second Grade
Making Me Fire Safe

Third Grade
Positively Fire Safe

Fourth Grade
Fire Safety: Stop the Heat

Fifth Grade
Charged Up For Fire Safety

Sixth Grade
Fire Safety Power

Seventh Grade
Responsible For Fire Safety

Eighth Grade
Fire Safety's My Job

Health (High School)
A Lifetime For Fire Safety

Economics (High School)
Fire Safety For Consumers

Scope and Sequence for Fire and

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade
General Objectives	basic awareness of fire and burn dangers, simple actions to reduce injury, parent involvement	basic knowledge of fire and burn hazards, basic understanding of simple injury reduction, continuation of parent involvement	basic understanding of how to prevent and put out fires, greater self-direction to prevent and react to fire, smoke or burn situations	hazards and safe storage of flammable liquids, positive actions to prevent fires and burns or to reduce injuries especially related to metallic objects	principles of extinguishing fires, issues related to peer pressure related to fire setting, self-motivation to affect changes with family involvement, role of fire service in the community
Science of Fire understands and analyzes facts about fire	classifies "good" and "bad" fires and heat sources *25(a)3A, 26(a)1C	identifies three elements of fire triangle *25(b)2C lists and classifies things that do and do not burn *25(b)3B,5B	explains putting out a fire as removing or controlling one element *25(c)3B, 26(c)1C defines and gives examples of controlled and uncontrolled fires *25(c)3B, 26(c)1C	defines and gives examples of combustible noncombustible flammable and nonflammable materials, with relation to gas, liquid and solid states *25(d)7A, **3 1 3 5	interprets three elements of fire to explain how to prevent and extinguish fires *25(e)4B, 26(e)1G describes characteristics of heated gases from fires *25(e)4B, 26(e)1G
Safety Communication knows and applies terms and symbols associated with fire and burn safety	identifies EXIT signs in schools and public buildings *29(a)1E identifies "hot" and "cold" symbols on faucets *26(a)1C, 29(a)1E				
Injury Reduction knows, performs and analyzes techniques to reduce fire and burn injuries	demonstrates and practices rolling on ground in case of clothing fire *25(a)3C, 26(a)1C, 29(a)1D demonstrates and practices crawling on ground in smoke of fire situations *25(a)3C, 26(a)1D	demonstrates cooling a burn with cool water *25(b)5B, 26(b)1C, **1 1 demonstrates and describes crawling in suspected smoke or fire situation because smoke rises *25(b)2C, 26(b)1C, **1 1 demonstrates and describes rolling to put out clothes fire *26(b)1C, **1 1	explains using cool water to reduce burn injury *25(c)7B, 26(c)1C explains that rolling on ground keeps air from fire on clothes *25(c)7B, 26(c)1C explains that smoke and gases from fire can affect thinking *25(c)7B, 26(c)1C	explains injury reduction skills to others through song, dance, story, demonstration, etc *26(d)1D,1E	lists and describes effects of toxic gases in smoke and fire byproducts *25(e)7B, 26(e)1G, **1 4
Hazard Recognition recognizes fire and burn hazards at home, play and work	classifies hot and cold objects, including cigarettes and appliances *25(a)1A,3A, 26(a)1C identifies smoking cigarettes as a hazard to cause burns and to start fires *26(a)1D	distinguishes electrical objects, a potential heat sources, as having cords *25(b)3B,4B identifies home and community as city or rural and types of related fire risk *25(b)6D, 29(b)5A, **1 6	predicts how electrical appliances can become hazards through carelessness, misuse, disrepair, including unattended cooking *25(c)6A, 26(c)1C identifies special holiday hazards related to family customs or traditions *26(c)1C, 29(c)6B	classifies metallic and non-metallic objects *25(d)3B, **3 6 distinguishes metallic objects as contact burn hazards *25(d)6B,8A, 26(d)1E identifies positive behaviors with hazardous appliances *26(d)1E	describes types of hazards from discarded cigarettes *26(e)1F
Hazard Reduction applies and values techniques for reducing or eliminating fire and burn hazards	states rule to stay aware from hot objects *26(a)1C, 29(a)1A tells parents, "Keep me safe from fire" *29(a)1B	describes or illustrates need for smokers to have watchers *25(b)7B, 26(b)1D encourages parents to conduct home inspection using provided checklist *25(b)7B, 26(b)1C,2B	describes benefit of family working together to reduce fire and burn hazards *26(c)2B writes at least five rules for safe behavior *26(c)1C	conducts inspection for safe flammable storage with parents using provided checklist *26(d)1E,2B identifies fire safety for holidays in each month *26(d)1E	demonstrates reactions to hazardous situations, including removal of fire hazards *26(e)1F identifies safety features in school, home and other buildings *26(e)1F,1G
Escapes And Drills knows and applies methods of fire and smoke warnings and escape and exit techniques, values the importance of smoke detectors and escape planning	demonstrates actions in school exit drills *26(a)1C, 29(a)1D	identifies smoke alarm as warning to get out *26(b)1C draws map of home with two ways out for everyone *25(b)4D states steps and rules for school exit drill *26(b)1C, 29(b)4B	describes general guidelines for smoke detector placement (each level, outside bedrooms) *26(c)1C describes or illustrates alternate ways out of a building *26(c)1C organizes home drill *26(c)1C,2B, 29(c)1C	gives details of action at home alone in suspected fire situations *26(d)1D assists parent in maintaining smoke detector using provided guidelines *25(d)7B, 26(d)1E,2B identifies low battery warning on smoke detector *26(d) 1D	explains need for exit plans and drills, especially at home *25(e)6A, 26(e)1F,2C, 29(e)1A, **1 8
Matches And Fireseting recognizes hazards of matches, lighters and other fireseting instruments knows and values techniques for reducing intentional fires	demonstrates telling an adult if he/she sees matches *26(a)1C, 29(a)1A	describes or illustrates matches as tools for adults *26(b)1C	describes why matches are not toys *26(c)1C	describes how matches can be used safely *26(d)1E	demonstrates resisting peer pressure related to fire, matches and smoking *29(e)1C, **1 8
Reporting A Fire knows and applies appropriate methods of reporting suspected fire or smoke situation	demonstrates telling an adult about smoke or fires *25(a)3C, 26(a)1C	demonstrates yelling and other signals to warn others *26(b)1C memorizes emergency telephone number *26(b)1C	demonstrates dialing emergency telephone number *26(c)1C demonstrates giving name and address *26(c)1C	describes or demonstrates what to report in an emergency situation *26(d)1D	describes local locations and uses of fire alarm boxes *26(e)1F
Care Giving understands and values appropriate supervision of and intervention for other people, especially young children and older adults	tells parents to give fire safety rules to baby-sitter *26(a)1C			writes rules for baby-sitter or care giver for family, with parents assistance and consideration of ages of family members *26(d)2B, 29(d)2A, 6B	
The Fire Service understands and values the role of the fire service in preventing and suppressing fires	identifies fire fighters and other fire service workers as friends *29(a)1B	describes fire fighter as community helper who helps prevent fires and who puts out fires *25(b)7C, 29(b)4C, **1 7	identifies ways that fire fighters are involved in fire suppression and prevention *29(c)4A		lists the four primary services provided by the fire services *26(e)3A describes fire department's role in helping the community stay safe and healthy *26(e)3A, **1 7
Outdoor Safety knows and applies techniques for reducing outdoor fires and injuries from outdoor fire and burn hazards	demonstrates or illustrates staying away from campfire, trash burning, etc *26(a)1C	distinguishes how outdoor fires are different from building fires *25(b)6D, 26(b)3, **1 6	identifies outdoor electrical hazards (storms, tools, campfires) *25(c)4B, 26(c)3A, **2 9		describes safe practices with fireworks *29(e)3B, **1 6 writes at least five rules for outdoor fire safety *26(e)3B

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Burn Prevention Education In Texas

Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Health	Economics
heating equipment safety; impact of fire on outdoor environment and methods to reduce that impact; first aid for burns; personal relationship to community fire safety	fire physics, electrical hazards and responsible to those hazards continuation of first aid for burns	responsible decision-making regarding fire and burn hazards, including peer pressure related to fire risks preparation for and reaction to possible fire situations	technical aspects of fire hazards and detection; fire hazards outside the home	review of fire and burn prevention techniques and emergency actions awareness of needs of all age groups smoking and flammable liquids	awareness of adult responsibilities to preserve family, property and economy preparation for maintaining one's own home; U.S history of fire and burn incidents
	lists types of heat and fuel to define classes of fire '25(g)2D, **3.1 describes fourth element of fire, uninhibited chemical reactions '25(g)4B, **3.1 describes three types of fire extinguishers '26(g)1H		defines and describes flash point, flash fire, flammability of construction and clothing types '44(b)7D		
analyzes product advertisements for fire and burn safety information '26(f)2A		analyzes product labels for fire safety including flammable or combustible warnings, nonflammable labels '44(a)11C communicates hazards of smoking, using written, illustration or oral format '48(a)1D		identifies and describes cigarette health messages and writes cigarette fire safety messages '65(a)1A,1D,2A identifies and describes flammable liquid warnings on home-use products, cleaners, gasoline, etc. '65(a)1E	defines terminology relating to fire insurance and home safety (detectors, sprinklers, etc.) '69-4D
describes three classes of burns and first aid for each '26(f)1G,2D	classifies six types of burns by causes (contact, UV, chemical, etc.) '26(g)2F) describes special first aid actions for burns other than contact burns '26(g)2D			lists best actions in suspected fire or smoke situations and first aid for three types of burns '65(a)1E	
explains hazards of heating equipment, including safety considerations such as UL inspection certification and proper placement '25(f)7B, 26(f)1H, **2.6 analyzes safety of alternative heating '25(f)6E, 26(f)1H), **2.6	describes why electricity and electrical appliances are fire and burn hazards relative amount of energy used by various appliances to their risk '25(g)6D, **3.4		lists at least 10 typical hazards in the workplace, including industrial, retail and office '44(b)3	describes role of carelessness in fires and burn injuries, including cigarettes, heating and cooking '65(a)1B,1D,1G organizes and conducts comprehensive home inspection, including outdoors and nonliving areas '65(a)1B,1E,1G	describes the economic impact of fires and related casualties in the U.S. '69-1B,1G
conducts inspection of home heating equipment with parents to check for safe usage '25(f)7B, 26(f)1H, **2.6 gives examples of correcting holiday hazards '26(f)1H	develops holiday checklist that applies fire safety rules '25(g)7B, 26(g)1H,2C	writes at least 10 rules for smokers '44(a)11B,C describes safe practices with fire hazards commonly found in home or outdoors '44(a)11C develops and implements home survey instrument '44(a)11C	describes desire to be safe and to keep others safe '44(b)7D	organizes and conducts comprehensive home clean-up, including outdoors and nonliving areas '65(a)1B,1E,1G	describes fire and burn safety responsibilities of consumers and residents '69-1G,4A identifies hazard reduction efforts of various organizations, agencies '69-2A, 4B
evaluates school exit drill '25(f)2D,6A, 26(f)1H (relate to voi fd)	analyzes prepared maps of other locations to show appropriate detector placement '26(g)1H,2C draws map of home to scale to show smoke detector placement and home exit plan '25(g)7B, 26(g)1H,2C	describes or demonstrates what to do in unusual circumstances '44(a)11C,48(a)4I organizes an obstructed drill at school or home '48(a)4J	describes basic function of two types of smoke detectors '48(c)3D describes basic function of sprinklers, including residential fast response sprinklers '48(c)3D surveys and maintains smoke detectors at home '48(c)3D		lists types of building code requirements for detectors, sprinklers, exits '69-2A,4B,4D
describes hazards of intentional fires, especially relating to waste and loss of resources '29(f)2B		describes alternative behaviors to peer pressure related to fireworks and smoking '44(a)11A, 48(a)1D identifies arson as a crime '48(a)2L writes at least five rules for using matches and lighters '44(a)11B,C			explains effects of business fire on community and production '69-1B,1E
identifies hazard of false alarms, especially relating to wasting resources '29(f)2B	prepares time line in response to fire sighting and reporting '25(g)4E, 29(g)7A explains why to report smoke or suspected fire promptly '25(g)6D, 26(g)1H	describes how to discourage false alarms '44(a)11C,48(a)2L			
		outlines and details duties of baby-sitter '44(a)11C, 48(a)4I,J		describes general accident prevention and wellness needs of children, handicapped and senior citizens '65(a)1G,3E	describes fire and burn safety responsibilities of citizens in their roles as caregivers or providers '69-4A
describes role of volunteer fire department in the community '26(f)3A	describes professionals involved in emergency response and burn care '26(g)3A			describes at least five community health services and other resources that assist in community fire safety '65(a)3D	
describes impact of grass and tree fires on land forms '25(f)6E, **2.2 lists steps in safe procedures for burning debris and cooking on charcoal campfire, grill '26(f)3B gives examples and application of cleaning trash and brush to reduce fire hazard '26(f)3B	describes dangers of high tension wires '26(g)1H, **3.4	lists comprehensive camping safety rules '44(a)4B	lists comprehensive rules for outdoor safety '44(b)7D investigates community laws on fireworks '44(b)7D	describes fire safety precautions related to gasoline, autos, outdoor tools and discarded cigarettes '65(a)1G	

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	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade
* **Essential Elements** Current essential elements as defined by Chapter 75 of the Texas Education Code that apply. The student shall be provided opportunities to	§75.25 (a) 1A. use comparators ... heaviest/old §75.25 (a) 3A. classify objects by comparing similarities and differences §75.25 (a) 3C. arrange events in sequential order §75.26 (a) 1C. recognize hazards in the environment and acquire knowledge and skills needed to avoid injuries and to prevent accidents §75.26 (a) 1D. recognize negative effects of ... tobacco §75.29 (a) 1A. identify examples of right and wrong behavior §75.29 (a) 1B. discuss ways people can help each other §75.29 (a) 1D. practice rules of safety §75.29 (a) 1E. recognize safety symbols	§75.25 (b) 2C. observe properties of objects, organisms, and events in the environment. §75.25 (b) 3B. classify objects, organisms, actions, and events from the environment according to similarities and differences §75.25 (b) 4B. describe objects, organisms, and events from the environment. §75.25 (b) 4D. record data and interpret the arrangement of data on picture graphs, bar graphs, and maps §75.25 (b) 5B. compare temperature of objects §75.25 (b) 6D. draw conclusions from observed data. §75.25 (b) 7B. relate objects and activities to daily life §75.25 (b) 7C. relate science to careers. §75.26 (b) 1C. recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.26 (b) 1D. recognize negative effects of tobacco §75.26 (b) 2B. recognize the health of the family depends upon contributions of each of its members §75.26 (b) 3. recognize interdependence of people and the environment, and recognize personal responsibility for protecting the environment. §75.29 (b) 4B. identify school and community rules (laws) §75.29 (b) 4C identify authority figures in community §75.29 (b) 5A. know geographical location of home in relation to school and community	§75.25 (c) 3B. classify matter and forces, organisms, actions, and events from the environment according to similarities and differences §75.25 (c) 4B. describe objects, organisms, and events from the environment. §75.25 (c) 6A. predict the outcomes of actions based on experience or data. §75.25(c)7B. relate objects, science principles, and activities to daily life §75.26 (c) 1C. recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.26 (c) 2B. recognize the health of the family depends upon contributions of each of its members §75.26 (c) 3A. recognize interdependence of people and the environment, and recognize personal responsibility for protecting the environment §75.29 (c) 1C. volunteer for leadership §75.29 (c) 4A. identify some government services in the community §75.29 (c) 6B. describe family traditions and customs	§75. 25 (d) 6A. Use observations to form definitions of objects, actions, organisms, events, and processes. §75. 26 (d) 2B. recognize the health of the family depends upon contributions of each of its members §75.25 (d) 6B. state generalizations about similarities and differences among objects, organisms, and events §75.25 (d) 7A. compare and contrast objects, organisms, and events §75.25 (d) 7B. relate classroom objects, science principles, and activities to daily life §75.25 d) 3B. classify matter and forces, organisms, action, and events from the environment according to similarities and differences §75.26 (d) 1D. practice general emergency processdures §75.26 (d) 1E. recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.29 (d) 2A. describe ways a community satisfies needs for food, clothing and shelter §75.29 (d) 6B. describe how individuals and families change over time	§75. 28 (e) 3B. recognize interdependence of people and the environment, and recognize personal responsibility for protecting the environment §75. 29 (e) 1A. accept the responsibilities of membership in various groups §75.25 (e) 4B. describe objects, organisms, and events from the environment. §75.25 (e) 6A. predict the outcomes of actions based on experience or data. §75.25 (e) 7B. relate classroom objects, science principles, and activities to daily life §75.25 (e) 8B. state relationships among objects, organisms, and events using operational definitions. §75.26 (e) 1F. practice general emergency procedures §75.26 (e) 1G. recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.26 (e) 2C. recognize the health of the family depends upon contributions of each of its members §75.26 (e) 3A. recognize scope of services provided by community health agencies §75.29 (e) 1C. explain how groups influence individual behavior
** **Science Content** content from the sciences that shall be emphasized at the grade level shall include		**Life Science** 1.1 basic needs and life processes 1.6 ecology ... interdependence of living things 1.7 application of life science to careers and everyday life	**Earth Science** 2.9 human responsibility regarding earth science phenomena ... natural resources	**Physical Science** 3.1 energy ... kinds of energy ... forms of energy ... sources of energy 3.5 phases of matter: solids, liquid and gas 3.6 structure of matter ... families of elements: metals and nonmetals	**Life Sciences** 1.4 structure and functi ... of the human body 1.6 ecology ... interdependence of living things 1.7 application of life science to careers and everyday life 1.8 human responsibility regarding life science phenomena

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Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Health	Economics
§75.25 (f) 2D observe phenomena resulting from the life, earth, and physical sciences §75.25 (f) 6A predict the outcomes of actions based on experience or data §75.25 (f) 6E draw conclusions from observed data §75.25 (f) 7B relate classroom objects, science principles, and activities to daily life §75.26 (f) 1G identify ways to care for the principal body systems §75.26 (f) 1H recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.26 (f) 2A recognize benefits and limitations of advertising as it relates to selection of health ... products §75.26 (f) 2D recognize need for first aid §75.26 (f) 3A identify locally available voluntary health agencies §75.26 (f) 3B recognize interdependence of people and the environment, and recognize personal responsibility for protecting the environment §75.29 (f) 2B explain why conservation of economic resources is important	§75.25 (g) 2D observe phenomena and apply knowledge of theories, facts, and concepts from the life, earth, and physical sciences §75.25 (g) 4B name and describe objects, organisms, and events from the environment §75.25 (g) 4E record data and interpret the arrangement of data on graphs, tables, and other visuals §75.25 (g) 6D form and state generalizations about similarities and differences among observed objects, organisms, events, and phenomena §75.25 (g) 7B relate classroom objects, science principles and activities to daily life §75.26 (g) 1F identify factors, including peer pressure, that contribute to ... tobacco ... abuse and methods of prevention §75.26 (g) 1H recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents §75.26 (g) 2C recognize the health of the family depends upon contributions of each of its members §75.26 (g) 2D identify basic emergency treatment §75.26 (g) 3A relate the system of health services provided by government to the health needs of people §75.29 (g) 7A make and interpret time lines	§75.44 (a) 1D recognize that individuals must access the consequences of their decisions §75.44 (a) 11B investigate the range of effects on personal health and safety from the use of ... tobacco §75.44 (a) 11C discriminate between responsible and irresponsible choices that affect personal health §75.44 (a) 4B describe ecological relationships in the environment §75.44 (a) 11A determine alternate courses of action when one is facing pressures concerning use of ... tobacco §75.48 (a) 2L support the rules and laws of one's school, community, state and nation §75.48 (a) 4I devalop criteria for making judgments §75.48 (a) 4J use problem-solving skills	§75.44 (b) 3 classify objects or events according to similarities and differences §75.44 (b) 7D contrast human activities that affect the natural environment §75.48 (c) 3D analyze the impact of technological innovations on business, industry and agriculture (in U.S.)	§75.65 (a) 1A understand the care of body systems and their functions §75.65 (a) 1B relate personal behavior to wellness §75.65 (a) 1D demonstrate responsible behavior concerning ... tobacco §75.65 (a) 1E exhibit skills in accident prevention, injury control and emergency action §75.65 (a) 1G identify components of comprehensive accident prevention programs §75.65 (a) 2A analyze messages of advertising for health resources and activities §75.65 (a) 3D describe the wide range of resources designed to protect and promote well-being of people §75.65 (a) 3E investigate current health issues	§75.69 1B analyze how supply and demand affect prices §75.69 1E analyze the roles of economic incentives, voluntary exchange, private property rights and competition §75.69 1G examine the roles of labor and consumers in the American free enterprise system §75.69 2A understand how the government both protects and regulates the operations of the market system §75.69 4A describe the rights and responsibilities of consumers §75.69 4B identify ... agencies that provide consumer protection §75.69 4D define basic consumer terminology in the areas of credit, insurance, budgeting and home ownership or leasing
Earth Science 2.2 geology ... agents of weathering, erosion and deposition 2.6 meteorology ... effects of weather change and severe weather types ... effects of weather on human activities	Physical Science 3.1 energy ... kinds of energy ... sources of energy ... transformation of energy from one form to another 3.4 electricity and magnetism: charges, circuits, properties, electromagnetism, etc.				

Introduction

Introduction

Why teach fire and burn prevention?

Each year during the past decade, about 300 Texans have died in fires. The Texas Commission on Fire Protection is committed to reducing this alarming statistic. Analysis of fire statistics shows that the vast majority of fires — and the resulting fire deaths — could have been prevented. Regretfully, most people do not know or practice even simple actions that can prevent fires and burns.

The Texas Commission on Fire Protection believes the key to reducing fires and fire deaths is education. Fire safety education has traditionally been concentrated in elementary school observances of Fire Prevention Week. While these observances can produce effective results, thoughtful analysis of the fire problem and fire safety educational programs shows that a more comprehensive, age-appropriate approach to fire safety education can multiply its benefits.

Recognizing the limits of classroom instruction time, the Texas Commission on Fire Protection has examined the Texas essential elements of instruction to determine the most appropriate topics with which to integrate fire prevention and fire safety. Teachers from across the state have provided feedback on topics appropriate for each grade level, kindergarten through high school.

The result of this extensive research is "Fire Safety for Texans," a series of curriculum guides teaching fire and burn prevention. Each grade-level program has been coordinated with essential elements in that grade and with the unique specific fire safety needs of that age group. The lesson plans have been field tested in classrooms across the state. On average, students who have been taught using these materials score 26 percent higher than students in control groups.

As you use this guide, you and teachers in other grade levels will be part of a continuum of fire safety education spanning all grades. The Texas Commission on Fire Protection believes this continuum will help create a generation of Texans who will be fire-safety aware. In turn, all Texans can benefit from a decrease in the number of needless fire deaths and an increase in safer homes and worksites — a benefit we all deserve.

This Booklet

This booklet, "Fire Safety's My Job," is specifically designed for eighth-graders. The following sections give specific information on the essential elements applicable to fire and burn prevention and on the age-specific needs of eighth-grade students related to fires and burns. You will also find additional information on the format and materials found in this booklet.

This booklet has three sections:

- **Lesson Plans.** This section includes all steps in the lesson cycle.
- **Teacher Materials.** This section includes all teaching aids and tests.
- **Student Materials – Duplicating Masters.** This section includes master copies of materials to be used by students.

General Objectives: To focus on technical aspects of fire hazards and detection

To explore fire hazards outside the home

Essential Elements: The student will be provided opportunities to:

§75.44 (b) 3. classify objects or events according to similarities and differences.

§75.44 (b) 7D. contrast human activities that affect the natural environment.

§75.48 (c) 3D. analyze the impact of technological innovations on business, industry and agriculture (in U.S.).

Background: Age Profile

Stage of identity vs. role confusion, which means the young teen needs experiences that will help establish his own identity. Lack of successful experiences may lead to confusion about his future role as an adult.

The young teen experiences variability in emotions, physical abilities and scholastic interests. She is probably more concerned about appearance and sex roles than occupational choice, but will begin thinking about careers and the future.

While the eighth grader desires to be independent, acceptance by peers is very important. He may be easily influenced by peer pressure and have a tendency to hero worship. The young teen may take risks and exhibit a tendency to test authority. She "tries on" different attitudes and actions.

He is beginning formal operational thought, which means he is learning to solve problems without models. He wants to try mental manipulations. Thinking can be flexible, abstract and local. The junior high student can apply his new thinking skills to many situations. Successful learning can take place through

experiences, hypothetical projections, role models, demonstrations, rehearsal and teaching others.

The young teen operates under a morality of cooperation. She views rules as flexible, to be obeyed out of respect.

Fire And Burn Hazards

Cigarette smoking, especially combined with drugs and alcohol.

Cooking — contact with stoves or other appliances; hot liquids or grease while serving or cooking food, including job-related.

Flammable substances — gasoline, including use in car, storage in garage, use to start fire; explosive chemicals.

Burns from mechanical equipment — burns from exhaust, radiator, battery or welding on cars or motorcycles; gasoline; mini-bikes and lawn mowers.

Clothing ignition from careless smoking or cooking. Smoke and gas inhalation from fire.

Outdoor hazards — utility poles and high-tension wires; sunburn; fireworks.

Teacher's Notes On Materials: Illustrations and activity sheets in this booklet are intended to serve as masters. Photocopy, then use the photocopy as directed.

The eighth-grade unit uses background information and activity sheets in the form of a student "Tech Manual." The teacher may produce the booklet (insert all pages in a folder or staple pages together), or the pages may distributed to the students during each lesson to insert in a folder. The lesson plans assume that the material has already been compiled into booklets.

Pages to include in the student "Tech Manual" are:

- "Fire Safety Technical Manual" Title Page
- "Factors In Ability To Burn"
- "How Would It Burn?"
- "Hazards In The Workplace"
- "Selected Safety Guidelines"
- "Be On Guard"
- "My Own Business"
- "Smoke Alarms On Guard"
- "Home Smoke Alarm Survey"
- "Outdoor Fires"
- "Outdoor Fire Safety"
- "Wanted: Fire Safety Helper"

Pre-Test and Post-Test: Conduct the pre-test prior to presenting the first lesson and the post-test following the fifth lesson.

Teacher's Note on Closure Activities: Some activities included in the closure phase of the lesson cycle may be effectively used in the next lesson's focus activity.

Key To Icons: The following icons can be used to easily identify activities in the lesson plans:

Lesson objectives

Focus and closure

Creative group activity, including role playing

Lecture

Group problem-solving activity

Answering questions

Guest presenter

Investigation or research

Creative writing activity

Cut-and-paste activity

Group discussion

Drawing, artwork or illustration

Lesson Plans

LESSON ONE:

Applying Fire Science

Goal: *To relate characteristics of fire and flammable/ combustible materials*

Objectives: The student will:

- define and describe fire, flash point, flammability of construction and clothing types *44(b)7D

Materials: Pre-tests (p. 15); "Fire Safety Learning Laboratory" sign (p. 16); pages titled "Fire Safety Technical Manual"(p. 29), "Factors in Ability To Burn" (p. 30) and "How Would It Burn" (p. 31) from student "Tech Manual"; "Factors In Ability To Burn" overhead transparency (p. 17); answer keys (p. 23).

Focus: Administer pre-test before beginning lesson.

Display "Fire Safety Learning Laboratory" sign. Introduce unit on fire prevention by reviewing basic information (three elements of fire, rolling to put out clothes fire, crawling in smoke, cooling a burn, checking for fire hazards). Tell students that:

- This study will focus on the workplace and on technical aspects of fire safety.
- The classroom will be a mock factory called the "Fire Safety Learning Laboratory."
- The students will be "Fire Safety Technicians." Define "technician" as a person who has a specialized job that requires specific knowledge and skill.

List unit objectives:

- To focus on technical aspects of fire hazards and detection
- To explore fire hazards outside the home

Outline lesson objectives (paragraph above).

Presentation Of Content: Distribute "Fire Safety Tech Manuals." Discuss purpose of a technical manual, presented on the title page. Encourage student involvement in the mock lab situation.

Participatory lecture: Remind students that before beginning their job, they will need some background information. Have selected students read aloud the definitions and descriptions of fire, flammable flash point, and flash fire. Have students give at least one example of the use of each term. Briefly examine the flash point chart. (The chart is provided as supplementary information.)

Display "Factors In Ability To Burn" on overhead projector. Examine and discuss explanation of "Factors In Ability To Burn." Have students classify items in the room as more or less easily burned.

Guided Practice: Direct student attention to classification activity on "Factors In Ability To Burn." Read the list of items and guide students in writing the name of the items in appropriate boxes.

Independent Practice: Direct student attention to "How Would It Burn?" activity. Instruct students to read the stories and answer the questions.

Reteaching: Invite a fire fighter or fire investigator to talk to class about burn characteristics of different types of structures.

Enrichment: Have students conduct a complete inventory of a room, listing all items. Have them classify each item in a chart similar to the chart used in the guided practice activity. Ask students to share their evaluation of the relative risk of fire in that room (does it contain more objects that are easily burned?) and how the risk of fire might be reduced.

Closure: Review selected responses to the story-question activity. Review the definition of flash point and flammable. Congratulate students on their "first day on the job" as "fire safety technicians."

Introduce the next lesson by telling students that they will examine fire hazards commonly found in workplaces and an increasingly popular way of reducing fire in the workplace.

LESSON TWO:

At The Workplace / Sprinklers

Goal: *To review fire hazards in the workplace and to study the concept and use of fire suppression sprinklers*

Objectives: The student will:

- list at least 10 typical hazards in the workplace, including industrial, retail and office *44(b)3
- describe basic function of sprinklers, including residential fast response sprinklers *48(c)3D

Materials: "Hazards In the Workplace" (p. 32-35), "Be On Guard" (p. 36) and "My Own Business" (p. 37) from student "Tech Manual"; "Fire Suppression Sprinkler" illustration (p. 18); answer keys (p. 23-24).

Focus: Remind students that despite awareness of fire hazards, the United States public has not shown great success in preventing fire; the exception is in the workplace, where laws and concern for profits have created much attention on the safety of property and people.

Tell students that their job at the Fire Safety Learning Laboratory today will be to examine workplace safety. Outline lesson objectives (paragraph above).

Presentation Of Content: Direct student attention to "Hazards In The Workplace" page in their "Tech Manuals." Read and discuss the first section. Have students name some types of equipment found in different types of work sites and businesses.

Read section "Sprinklers." Discuss the following questions:

- What is the purpose of automatic fire suppression sprinklers? (To put out or control the fire until fire fighters can arrive.)
- Why would a business owner or a building owner install sprinklers? (To protect the building or the supplies or equipment in the building. To save money.)
- In the past, most sprinklers were installed to keep property from being lost in a fire. Now, more sprinklers are being installed to protect people from fire. How do you feel about this? (Allow students to share their opinions.)
- Television and movie producers commonly show sprinkler systems going off, with every sprinkler in the room spraying water. Is this accurate? (No.)
- Where have you seen sprinklers in buildings? (Accept student responses. Most common sites that students may have seen: mall, hotels, stores, warehouses.)

Guided Practice: *Group problem solving activity:* Divide students into six groups. Assign each group one of the remaining sections. Have the students read their respective sections and prepare lists of five items or actions that might create fire hazards in that type of business. Allow five to 10 minutes. Instruct students to write their lists on the appropriate section of "Be On Guard" pages of their Tech Manuals.

Have groups report their lists. Write on poster or overhead projector, while students complete the remaining sections of "Be On Guard."

Independent Practice: *Creative analysis:* Direct student attention to "My Own Business" pages of their Tech Manuals. Have students pretend to set up their personal division of the Fire Safety Learning Laboratory based on their own interests. Working on their own, have students prepare a list of possible fire hazards and write a statement on the use or value of sprinklers.

Reteaching: Have students talk with parents, vocational teachers or other adults about safety in the workplace. Ask students to prepare list of 10 workplace fire hazards based on the discussion.

Review the operation of sprinklers, specifically that sprinklers are activated individually by high heat directly below the sprinkler head. Discuss how real operation of a sprinkler is different from their portrayal on television shows.

Enrichment: Have students interview parents or other adults on fire hazards or fire safety guidelines in their workplaces and prepare a report on the value of fire safety programs on the job.

Have students investigate the use of sprinklers in local buildings.

Closure: Review the purpose of sprinklers in controlling fires. Ask students if having sprinklers removes their responsibility for being careful with fire hazards. (No.) Have some students share information on the "businesses" they created in the independent practice activity.

Introduce the next lesson by telling students that their next job as Fire Safety Technicians will involve a technical wonder that is much more common than sprinklers and has saved many lives.

LESSON THREE:

Smoke Alarms

Goal: *To explore the functions and applications of smoke alarms*

Objectives: The student will:

- describe basic function of two types of smoke detectors *48(c)3D
- survey and maintain smoke alarms at home *48(c)3D

Materials: "Smoke Alarms At Work/How Smoke Alarms Work" (p. 38), "Smoke Alarms On Guard" (p. 39) and "Home Smoke Alarm Survey" (p. 40) from student Tech Manual; "Smoke Alarms At Work/How Smoke Alarms Work" illustration (p. 19); answer keys (p. 24).

Focus: Tell students today their jobs as Fire Safety Technicians will take them to their own homes.

Display "Smoke Alarms At Work" chart showing smoke alarm performance in fires. Tell students that fire safety experts say that having a working smoke alarm triples the chances of surviving a fire and that smoke alarms are technical innovations that have saves hundreds of lives and can save more. Outline lesson objectives (paragraph above).

Presentation Of Content: Direct student attention to "Smoke Alarms On Guard" pages in their Tech Manuals. Display "How Smoke Alarms Work" illustration. As students examine illustrations and explanations, lead a discussion on the similarities and differences of the two types of detection methods.

Direct student attention to "Helping Smoke Alarms Do Their Job." Review and discuss basic guidelines for smoke alarm placement and maintenance. Have students describe important times for checking smoke alarms. (When the alarm emits a low-battery warning, when moving into a new house, when the alarm seems to go off needlessly when there is no smoke.)

Guided Practice: Direct student attention to "Alike Or Different." Have students read the instructions and circle the appropriate answers.

Independent Practice: Direct student attention to "Home Smoke Alarm Survey" pages in their student Tech Manuals. Have students take the pages to their homes to complete the activity.

Reteaching: Direct students in writing statements on the importance of installing and properly maintaining smoke alarms.

Enrichment: Have students locate smoke detectors/alarms in school or other public building and describe the locations.

Have students research local ordinances on smoke alarms in residences, hotels and/or rental property.

Closure: Have student volunteers share the results of their home surveys. Remind students that the technology of smoke alarms has improved significantly in recent years and that the trend will probably continue. Remind them of their future role as family leaders and providers in maintaining smoke alarms in their homes.

Introduce the next lesson by telling students that their next assignment for the Fire Safety Learning Laboratory will help them become involved in the environment.

LESSON FOUR:

Outdoor Fire Safety

Goal: *To review and explore issues of outdoor fire safety, including fireworks*

Objectives: The student will:

- list comprehensive rules for outdoor safety *44(b)7D
- investigate community laws on fireworks *44(b)7D

Materials: "Outdoor Fires" (p. 41) and "Outdoor Fire Safety" (p. 42) pages from student Tech Manual; "Outdoor Fires" graphs (p. 20); answer keys (p. 24).

Focus: Review information from Lesson One on characteristics of forests and wildlands (more combustible in dry weather, high quantity of fuel for fire). Point out that while forests and wildlands are renewable resources, regrowth is long term. Emphasize students' role in preserving outdoors.

Tell students that for this lesson, the Fire Safety Learning Laboratory will move outdoors. Outline lesson objectives (paragraph above).

Presentation Of Content: Display "Outdoor Fires" graph on over head projector or poster. Point out graph titled "Types of Fires, 1991" and have students recognize outdoor fires as the largest numbers. Direct student attention to "Types of Outdoor Fires, 1991" on overhead or poster and have students recognize "Trees, brush and grass" as the largest number of outdoor fires and "Refuse (trash)" as the second largest.

Participatory lecture / discussion: Direct student attention to "Outdoor Fires" in student Tech Manual. Point out "Causes of Brush and Grass Fires" on the overhead transparency or poster, and direct student attention to those graphs in their books.

Lead discussion of the types of materials that are involved and the causes of outdoor fires as students answer questions on the page. Emphasize the conclusion that outdoor fires rarely occur naturally; that virtually all outdoor fires are caused by people, either on purpose or through negligence.

Guided Practice: *Small-group study:* Divide students into small work groups of two to four people . Direct student attention to "Outdoor Fire Safety" pages from student Tech Manual. Have students read the outline, then write rules or guidelines related to preventing outdoor fires for all items.

Note: The sections may be assigned by group, with results copied or posted for the entire class.

Independent Practice: *Investigation and /or opinion paper:* In preparing to write opinion papers described in the following paragraph, students may be assigned to investigate laws or rules regulating fireworks or outdoor burning in their community. If the investigation is not assigned, students may base their papers on general information provided in "Outdoor Fire Safety" (above).

Have students prepare opinion papers on the value of restrictions on fireworks and/or outdoor burning. Papers should include at least three outdoor fire safety rules that they can use or apply in their own experiences. Papers should integrate information on general hazards of outdoor fires, with recognition of fireworks and/or outdoor burning as an unnecessary source of heat.

Reteaching: Have students research the short-term and long-term effects of a wildlands fire. Their research might include loss of homes for animals, loss of crops, effect on soil erosion, cost of replacing trees or crops, or damage to nearby buildings.

Enrichment: Submit student papers to student newspaper or community newspaper for consideration for publication.

Have students research news stories on dry weather "outdoor burning bans" enacted by many county governments in recent years.

Closure: Review rules prepared by students in Guided Practice activity. Have student volunteers share their opinion papers. Restate general concern for preserving the environment by preventing outdoor fires.

Introduce next lesson by telling students that their final day acting as Fire Safety Technicians will be a look at how they might actually apply what they've learned about fire safety.

LESSON FIVE:

Accepting My Safety Job

Goal: *To review and reinforce personal responsibilities for fire safety*

Objectives: The student will:

- describe desire to be safe and to keep others safe *44(b)7D

Materials: "Help Wanted" illustration (p. 21); "Wanted: Fire Safety Helper" pages (p. 42) from student Tech Manuals; post-tests (p. 22); answer keys (p. 23-25).

Focus: Display "Help Wanted" illustration. Tell students that thanks to their work as "fire safety technicians" during this study, they now have many skills that would qualify them for this kind of job. Outline lesson objectives (paragraph above).

Presentation Of Content: *Brainstorming discussion:* Lead students in a brainstorming, review discussion on the meaning of:

- Fire — include review of fire history, components of fire, types of materials that are flammable, factors in flammability.
- Safety — include safety rules for various types of workplaces, safety rules for the outdoors, use of smoke alarms and sprinklers.
- Responsibility — include the student's ability to control and influence his/her environment, the changes in responsibilities as the student grows and matures, the role that the student can have in his family and community.

Guided Practice: Direct student attention to "Wanted: Fire Safety Helper" pages in student Tech Manuals. Instruct the students to prepare a description of a fire safety job of their choosing. Guide students in selecting a type of job (job title). Note suggestions on page. NOTE: Some student may prefer to select a general title, such as fire safety worker.

Continue guiding students in listing things that are needed to do the selected job. Help students relate what they have learned during the unit.

Independent Practice: Direct student attention to the second activity on their "Help Wanted" pages. Have the students write short letters saying why they are qualified for the jobs. Remind them to list at least five specific fire safety facts they know or skills that they have. Remind them to include one sentence expressing their personal desires to help others be fire safe.

Reteaching: Guide students in discussion of the interdependency of community and family members. Include a discussion of the consequences of a lack of safety awareness.

Enrichment: Invite a fire service professional to talk about his/her role in community safety.

Have students who are members of service groups (Boy Scouts, Girl Scouts, 4H, etc.) report on safety projects with which their organization has been involved.

Closure: Review the original "Help Wanted" illustration and compare it to the job descriptions and letters prepared by the students. Discuss real opportunities for becoming involved in community safety projects.

Congratulate students on completing their work as "fire safety technicians" for the "Fire Safety Learning Laboratory." Have students share their opinions on this method of doing a special study.

Administer post-test.

Teacher Supplemental Materials

Name _____

Eighth Grade: Fire Safety's My Job **PRE-TEST**

In the blank before each number, write the letter of the phrase that correctly describes the term:

___ 1. Fire A. Gives off vapors that will burn at low temperatures

___ 2. Flammable liquid B. A chemical process involving heat, fuel, oxygen and uninhibited chemical reactions

___ 3. Flash point C. Capable of burning

___ 4. Flammable D. Temperature at which vapors from flammable liquids will catch fire.

Circle the item in each pair that will burn more easily:

5. loosely-worn nylon shirt / tightly-woven cotton shirt

6. wooden house, edged with brick / concrete factory

7. oily rags stored in a closed metal can / oily rags stored on a shelf

Circle the letter of the best answer:

8. A fire suppression sprinkler is turned on by:
   a. the person who sees the fire.
   b. an alarm system that detects the fire.
   c. high heat directly below it.

9. Having a working smoke alarm _____ your chances of surviving a fire.
   a. doubles
   b. triples
   c. does not change

10. Which type of fire occurs more often?
   a. building fires
   b. outdoor fires
   c. car and truck fires

11. Which type of smoke alarm uses a small light to help detect smoke?
   a. photoelectric
   b. ionization

Circle True or False

12. Every person should be responsible for fire safety. **True False**

13. Fire suppression sprinklers cover the entire room with water in order to be sure to put the fire out. **True False**

14. Because fewer fires occur on the job, workers do not need to be concerned about fire safety. **True False**

Answer the following questions:

15. How often should a smoke alarm be tested?

_____

16. What burns most often in an outdoor fire?

_____

17. Name three types of fire problems found in the workplace:

_____

_____

_____

18. List three rules for outdoor fire safety:

_____

_____

_____

Teacher: Use with Lesson One, Page 7. Duplicate for student use.

Our Motto:

"Fire safety's MY job!"

Teacher: Use with all lessons. Transfer to poster or flyer, and display in classroom.

Factors in Ability To Burn

Background Information / Classification Activity

Many factors affect whether something will burn easily or whether it will be more difficult to burn. Two major factors are:

➤**Examples of resources that burn easily :**

plants, trees and grasses

wood and other plant products, such as cotton, paper, many fabrics, vegetable cooking oil, alcohol

petroleum-based products, such as gasoline, oil, many other flammable liquids, nylon and polyester

➤**Examples of resources that do not burn easily:**

metals and rocks

concrete, bricks and similar products

fabrics or wood that has been treated with a flame retardant chemical

Note: Leather and wool generally do not burn as easily as fabrics.

➤**The availability of oxygen is affected by how the item is made.**

Example: A tightly-worn cotton shirt allows less oxygen than a loosely-woven cotton shirt. Close-fitting clothes allow less oxygen than loose-fitting clothes.

➤**The availability of oxygen can be controlled by where the item is located.**

Example: Oily rags, which might self-ignite, should be stored in a closed metal container. If a fire should start, the fire will quickly use up the oxygen and die.

Classification Activity

Look at the following list of items. Classify each according to whether it would burn more easily or less easily. Then write each in the appropriate section of the table below.

Natural Resource

- forests
- grasslands
- petroleum
- rocks and barren soil

Buildings

- wood-frame house
- building built of steel and concrete

Clothes

- loose, flowing lace gown
- close-fitting, tightly-woven cotton shirt
- flame-retardant pajamas

Burns more easily	Burns less easily

Bonus

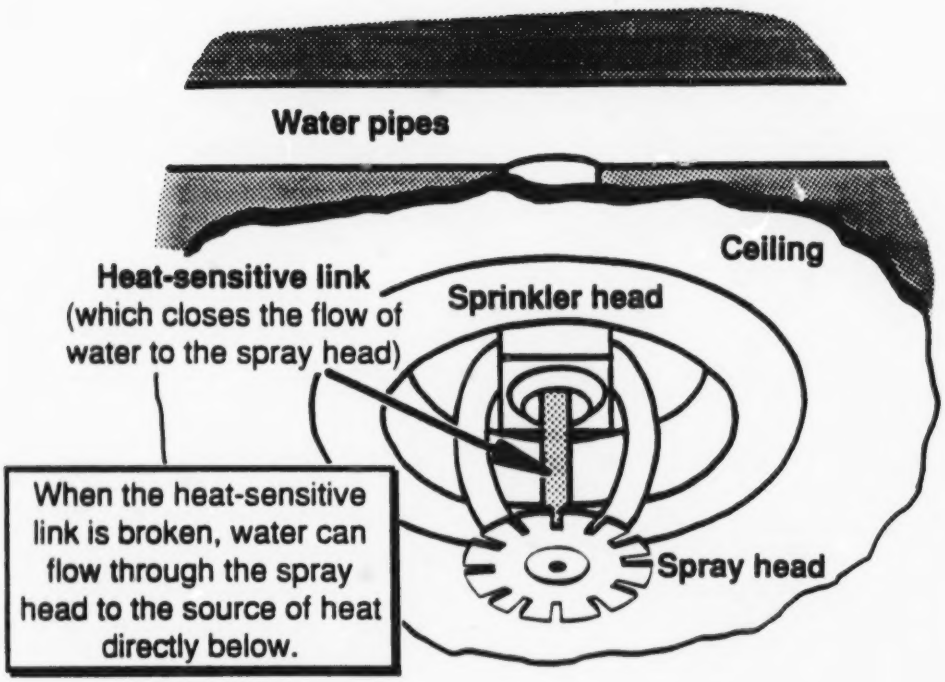
On a separate sheet of paper, make a complete list of all items in this room or a room at home. Then make a copy of the table above and classify each item on your list.

After you complete your classification table, write a statement telling whether you think a fire might be likely to start in the room.

Teacher: Use with Lesson One, Page 7. Transfer to overhead transparency

Fire Suppression Sprinkler

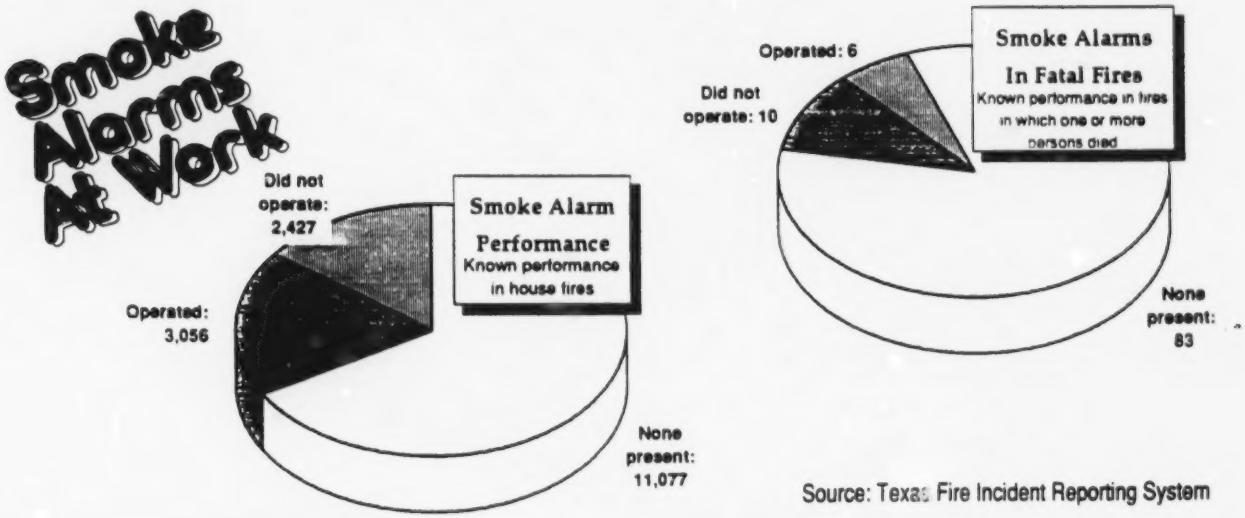
Background Information / Illustration


Water pipes
Ceiling
Heat-sensitive link
(which closes the flow of
water to the spray head)
Sprinkler head
When the heat-sensitive link is broken, water can flow through the spray head to the source of heat directly below.
Spray head

Teacher: Use with Lesson Two. Page 8. Transfer to poster or overhead transparency.

Smoke Alarms At Work / How Smoke Alarms Work

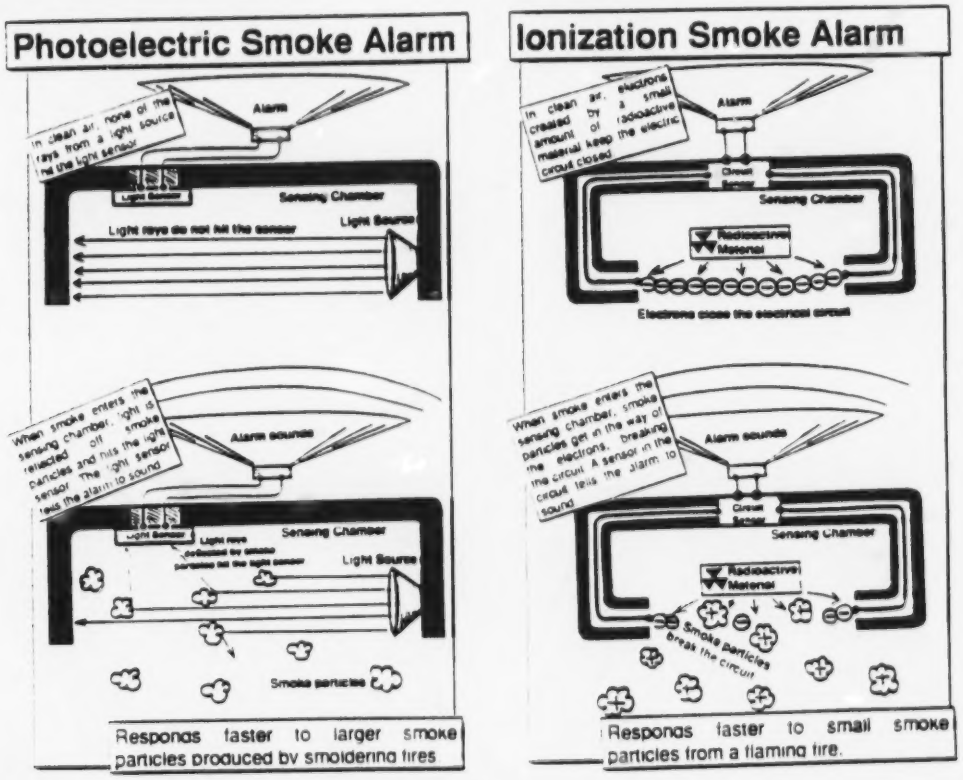
Background Information


Smoke Alarms At Work
Smoke Alarm Performance
Known performance in house fires
Did not operate: 2,427
Operated: 3,056
None present: 11,077
Smoke Alarms In Fatal Fires
Known performance in fires in which one or more persons died
Operated: 6
Did not operate: 10
None present: 83

Source: Texas Fire Incident Reporting System

How Smoke Alarms Work

Both types of smoke alarms need electricity to operate. They may use batteries or may be directly connected to the building's electrical wiring (called "hard-wired").

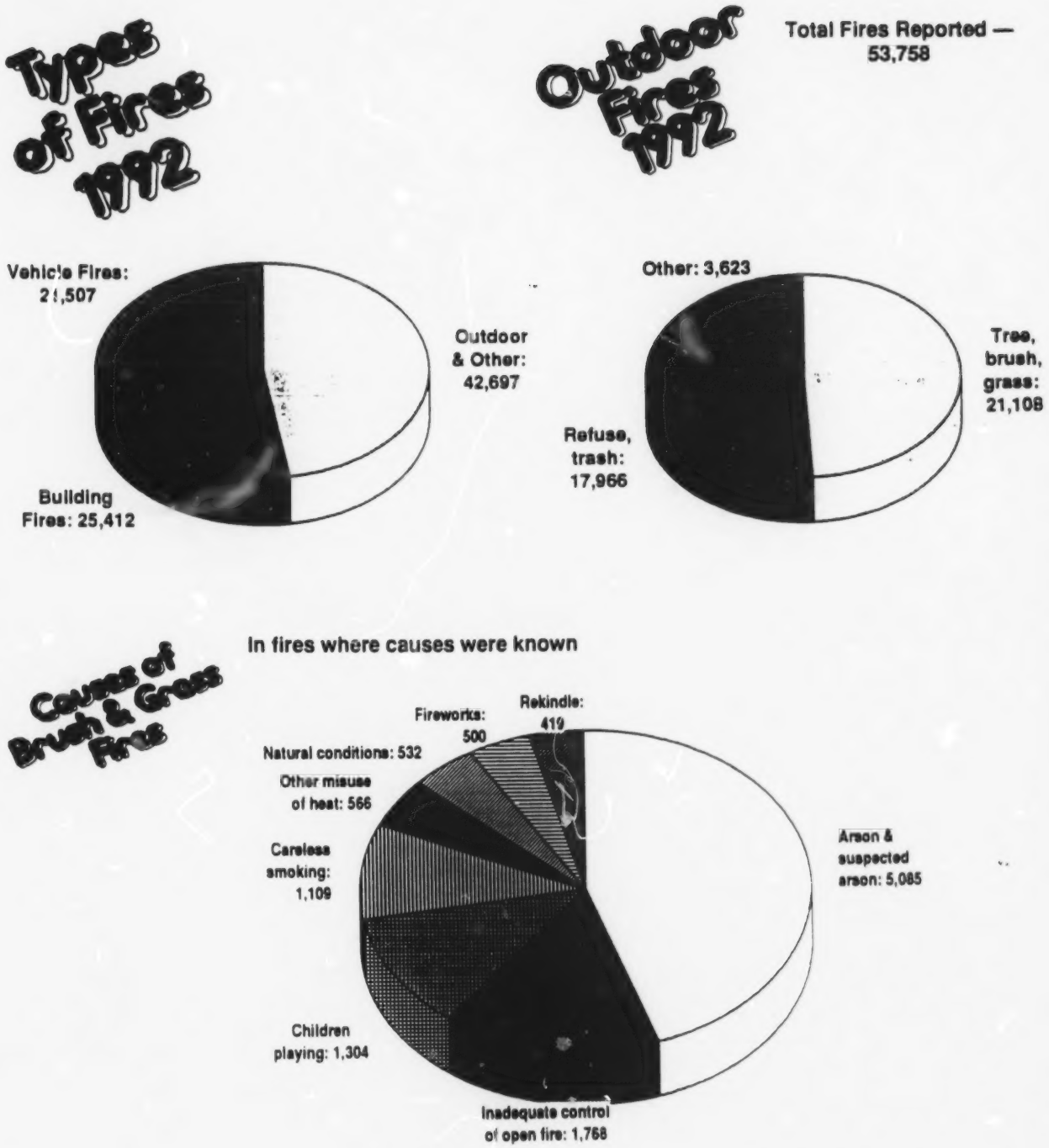


Teacher: Use with Lesson Three, Page 9. Transfer to poster or overhead transparency.

BEST COPY AVAILABLE

Outdoor Fires

Graph Illustrations



Source: Texas Fire Incident Reporting System

Teacher: Use with Lesson Four, Page 10. Transfer to poster or overhead transparency

Help Wanted

Take-charge person who knows about fire safety and prevention.

Job involves preventing fires and burns.

Teacher: Use with Lesson Five, Page 11. Transfer to poster or overhead transparency

Name _____

Eighth Grade: Fire Safety's My Job **POST-TEST**

In the blank before each number, write the letter of the phrase that correctly describes the term:

___ 1. Fire — A. Gives off vapors that will burn at low temperatures

___ 2. Flammable liquid — B. A chemical process involving heat, fuel, oxygen and uninhibited chemical reactions

___ 3. Flash point — C. Capable of burning

___ 4. Flammable — D. Temperature at which vapors from flammable liquids will catch fire.

Circle the item in each pair that will burn more easily:

5. loosely-worn nylon shirt / tightly-woven cotton shirt

6. wooden house, edged with brick / concrete factory

7. oily rags stored in a closed metal can / oily rags stored on a shelf

Circle the letter of the best answer:

8. A fire suppression sprinkler is turned on by:
   a. the person who sees the fire.
   b. an alarm system that detects the fire.
   c. high heat directly below it.

9. Having a working smoke alarm _____ your chances of surviving a fire.
   a. doubles
   b. triples
   c. does not change

10. Which type of fire occurs more often?
   a. building fires
   b. outdoor fires
   c. car and truck fires

11. Which type of smoke alarm uses a small light to help detect smoke?
   a. photoelectric
   b. ionization

Circle True or False

12. Every person should be responsible for fire safety. **True** **False**

13. Fire suppression sprinklers cover the entire room with water in order to be sure to put the fire out. **True** **False**

14. Because fewer fires occur on the job, workers do not need to be concerned about fire safety. **True** **False**

Answer the following questions:

15. How often should a smoke alarm be tested?

_____

16. What burns most often in an outdoor fire?

_____

17. Name three types of fire problems found in the workplace:

_____

_____

_____

18. List three rules for outdoor fire safety:

_____

_____

_____

Teacher: Use with Lesson Five. Page 11. Duplicate for student use.

ANSWER KEY-1

Name _____

Eighth Grade: Fire Safety's My Job PRE-TEST POST-TEST

In the blank before each number, write the letter of the phrase that correctly describes the term:

B 1. Fire — A. Gives off vapors that will burn at low temperatures
A 2. Flammable liquid — B. A chemical process involving heat, fuel, oxygen and uninhibited chemical reactions
D 3. Flash point — C. Capable of burning
C 4. Flammable — D. Temperature at which vapors from flammable liquids will catch fire

Circle the item in each pair that will burn more easily:

loosely-woven nylon shirt / (tightly-woven cotton shirt)

(wooden house) / wood with brick

(one rags stored in a closed metal can) / one rags stored on a shelf

Circle the letter of the best answer:

5. A fire suppression sprinkler is turned on by
a. the person who sees the fire
b. an alarm system that detects the fire
(c.) high heat directly below it.

9. Having a working smoke alarm _____ your chances of surviving a fire
(a.) doubles
b. triples
c. does not change

10. Which type of fire occurs more often?
a. building fires
(b.) outdoor fires
c. car and truck fires

11. Which type of smoke alarm uses a small light to help detect smoke?
(a.) photoelectric
b. ionization

Circle True or False

12. Every person should be responsible for fire safety. (True) False

13. Fire suppression sprinklers cover the entire room with water in order to be sure to put the fire out. True (False)

14. Because lower fires occur on the ski, workers do not need to be concerned about fire safety. True (False)

Answer the following questions:

15. How often should a smoke alarm be tested?
once a month

16. What burns most often in an outdoor fire?
grass, trees, brush

17. Name three types of fire problems found in the workplace.
Accept reasonable answers. (See Lesson 2.)
Most common: arson, industrial equipment, flammable liquids, electrical appliances

18. List three rules for outdoor fire safety.
Accept reasonable answers. (See Lesson 4.)
Most common: Don't throw out cigarettes, don't burn outdoors, avoid fireworks.

Name _____

Factors in Ability To Burn

Background Information / Classification Activity

Many factors affect whether something will burn easily or whether it will be more difficult to burn. Two major factors are:

1. What item is made of

▶ Examples of substances that burn easily:
paints, trees and grasses, wood and other plant products, cloth as cotton, paper, many synthetic materials, vegetable cooking oil, alcohol

▶ Examples of substances that do not burn easily:
metals and stone; concrete, brick and similar products

Names of wood that has been treated with a flame retardant chemical

Name: Leather and wool generally do not burn as easily as others.

2. Whether oxygen is available

▶ The availability of oxygen is affected by how thin there is mass.
Example: A tightly-woven cotton shirt allows less oxygen than a loosely-woven cotton shirt. Close-fitting clothes allow less oxygen than loose-fitting clothes.

▶ The availability of oxygen can be controlled by where the item is located. Example: Oily rags, which might self-ignite, should be stored in a closed metal container. If a fire should start, the fire will quickly use up the oxygen and go out.

Classification Activity

Look at the following list of items. Classify according to whether it would burn more easily or less easily. Then write each in the appropriate section of the table below.

forests	building of concrete and steel
grasslands	close-fitting cotton shirt
petroleum	flame-retardant pajamas
wood-frame house	
loose, flowing gown	

Bonus On a separate sheet of paper, make a complete list of all items in the room of a room at home. Then make a copy of the table above and classify each item on your list.

After you complete your classification table, write a statement telling whether you think a fire might be likely to start in the room.

Name _____

How Would It Burn?

Story Analysis Activity

Read each story, then answer the questions about fire safety in each situation.

The wetlands area includes forests and grasslands that are home to many birds and animals. Although the weather has been dry, many small animals and insects flourish. The summer days are long, and many people from the nearby town enjoy picnics in a small park on the edge of the forest.

The local fire department is concerned about fire in the wetlands. They are encouraging strict safety guidelines for a petroleum-based chemical storage building that is being built nearby.

Last three flammable items from the story: trees, grass, chemicals

What conditions or characteristics of the wetlands in this story make it easier to burn? dry weather, people picnicking

The neighborhood has a blend of old and new buildings. Mrs. Harris lives in a 100-year-old frame house that is furnished with wooden antiques and needlework. Upholstered furniture. Just down the block, the Garcia family recently built a brick home. They have enjoyed buying modern furniture — leather, brass and glass.

Everyone in the neighborhood was glad when a service station was built a few blocks away. The new building is built entirely of concrete blocks. It also has a small store and car wash.

Which one of the two houses would burn more easily? Mrs. Harris's

Why? wood frame, combustible contents

What characteristic of the new service station might make a fire more severe? built of concrete blocks

What characteristics of the service station might make a fire more likely? gasoline; water from car wash can spread gasoline

Name a flammable liquid that might be found at the service station: gasoline; oil; lubricants

What is the flash point of the flammable liquid you named? See chart on P.29

The drama department's production of "The Night Before Christmas" requires many different types of costumes. Mark, who plays the father, will be wearing loose-fitting wool longjohns and a stocking cap. Mari plays the mother and wears a long, flowing gown and a long housedress with billowing sleeves.

To be properly dressed as Santa Claus, Terrance is wearing a red suit with boots, hat and beard from a costume company. The company said all their costumes are treated with a flame-retardant chemical.

Of course, the students playing the children will wear regular children's pajamas, which are also flame retardant. A federal law says that all children's pajamas must be flame retardant.

Which costumes are most likely to catch fire? Santa suit and pajamas

Why? treated to be flame retardant

Which costumes are more flammable? Ma's and Pa's

Why? Ma's is very loose fitting

How could the costumes be changed to make them safer? Ma's could be more close fitting; Mary and Ma's could be treated with a flame-retardant chemical.

Name _____

Be On Guard

Analysis Of Fire Hazards In The Workplace

One of the following sections will be assigned to your group. Read the Safety Guidelines section of "Hazards in The Workplace" assigned to your group. Based on that information and other information in this lesson, list five fire hazards that are found in the workplace. During reports from other groups, complete the remaining sections.

Arson Accept reasonable answers.
1. Unhappy employees
2. Unhappy competitors
3. Financial problems
4. No alarms or sprinklers
5. Open to other crimes

High-Rise Buildings
1. Large amounts of combustible materials
2. No emergency planning
3. Smokers
4. Too many electrical appliances
5. Lack of proper maintenance, especially electrical

Garages And Workshops
1. Flammable liquids
2. Not following directions
3. Oily rags
4. Hot engine parts
5. Cluttered, dirty areas

Stores And Offices
1. Electrical equipment
2. Flammable liquids
3. Large amounts of combustible items
4. Trash fires
5. Smokers

Autos And Trucks
1. Gasoline
2. Lack of maintenance
3. Oil and other flammable liquids
4. Hot engine parts
5. Not having a fire extinguisher

Industrial Plants
1. Electrical equipment
2. Lack of maintenance
3. Industrial equipment, especially torches
4. Flammable liquids
5. Carelessness

Discussion: After completing your list, discuss how fire suppression sprinklers can be an important part of fire safety in businesses and homes.

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ANSWER KEY-2

Name _____

My Own Business

Creative Answers Activity

You have been given a special job — create your own division of the class's Fire Safety Learning Laboratory. Your division can be any kind of business you would like, so use your imagination. Ideas: specialty store, hair stylist, auto repair shop, computer service, storefront producer, traveling sales representative. Decide which one of the categories described in "Hazards in The Workplace" that your business matches best. You may use that information to complete this activity.

The kind of my business is Accept reasonable answers

The purpose of my business is to on all questions.

(tell what your business does, who might use your business, etc.)

Where my business might be LOCATED _____

(mall, own building, operated from a truck, etc.)

My job in my business is _____

The number of PEOPLE who might be working in my business _____

The kind of work my workers would be doing _____

What would I tell my workers about FIRE SAFETY at my business _____

_____

List the nine hazards with which you might be concerned:

① Check that hazards match

② characteristics on business

③ listed above.

④ _____

⑤ _____

➡ Write a sentence describing how the suppression sprinklers would be needed at your place of business:

Answer might include to protect lives or property, to save money.

Teacher: Use with Lesson Two, Page 6. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 37 Eighth Grade: Fire Safety's My Job

Name _____

Smoke Alarms On Guard

Helping Smoke Alarms Do Their Job

- Place at least one smoke alarm on each level (story) of the building.
- Place a smoke alarm outside each sleeping area.
- If your family sleeps with bedroom doors closed, place a smoke alarm in each bedroom.
- Test each installed alarm once a month. (Match to an important date, such as pay day or the date the electric bill arrives.)
- Change the batteries once a year. Suggested dates: daylight savings time clock change, birthday, anniversary of alarm installation or moving.
- For the best warning system, have alarm smoke alarms interconnected so that if one sounds, they all sound. Have the alarms wired to house wiring, with backup batteries.

Fire experts say that having a *working* smoke alarm *triples* your chances of surviving a fire.

Smoke alarms come in a variety of designs. Match the description to the type.

Alike or Different

1. Good early warning for smoke and fires	A. battery-operated B. hard-wired C. both
2. Should be tested once a month	A. battery-operated B. hard-wired C. both
3. More effective at detecting smoke from flaming fire	A. photoelectric B. ionization C. both
4. More effective at detecting smoldering fires	A. photoelectric B. ionization C. both
5. Should be placed outside sleeping areas	A. photoelectric B. ionization C. both
6. Uses a small light sensor	A. photoelectric B. ionization C. both
7. Uses a small radioactive cell	A. photoelectric B. ionization C. both

Teacher: Use with Lesson Three, Page 5. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 39 Eighth Grade: Fire Safety's My Job

Name _____

Home Smoke Alarm Survey

Investigation And Research Activity

Draw a map of your home. Draw a blackened circle to show the location of each smoke alarm. If needed, draw an open circle where other smoke alarms should be located.

Accept reasonable drawings

Check each smoke alarm using the steps in the table below.

Location	Test by pressing test button	Did the alarm sound?	If the alarm did not work, were the batteries changed?	Test again. If the alarm still does not sound, the smoke alarm should be replaced.
1 Possible answers: A	Check when done ✓	Circle one: (Yes) No	Circle one: (Alarm sounded) Batteries were changed / Batteries were not changed	Circle one: Alarm sounded after changing batteries / Should be replaced because alarm did not sound
2 B	Check when done ✓	Circle one: Yes (No)	Circle one: Alarm sounded / (Batteries were changed) / Batteries were not changed	Circle one: (Alarm sounded after changing batteries) / Should be replaced because alarm did not sound
3 C	Check when done ✓	Circle one: Yes (No)	Circle one: Alarm sounded / (Batteries were changed) / Batteries were not changed	Circle one: Alarm sounded after changing batteries / (Should be replaced because alarm did not sound)

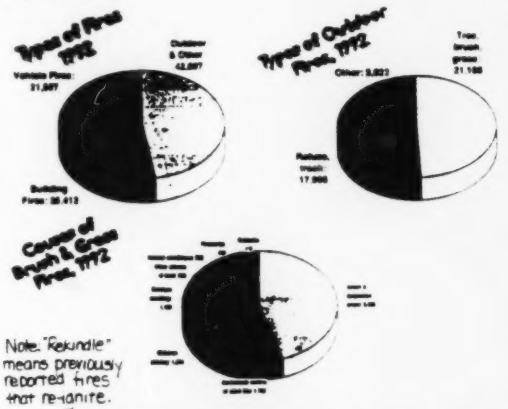
Teacher: Use with Lesson Three, Page 5. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 40 Eighth Grade: Fire Safety's My Job

Name _____

Outdoor Fires

Analysis Of Statistical Information



Note: "Rekindle" means previously reported fires that re-ignite.

Look at the graphs above and answer the following questions:

1. What type of fire occurred most often during 1992? outdoor and other
2. What were the two most common types of outdoor fires? tree, brush, grass + trash
3. What caused the largest number of brush and grass fires? How many fires? arson 5,065
4. List the next three most common causes of brush and grass fires: 1 inadequate control 2 children playing 3 careless smoking
5. How many brush and grass fires were caused by careless smoking? 1,109
   by fireworks? 500 by natural conditions? 532
6. How many brush and grass fires were caused by human actions? about 10,000

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 41 Eighth Grade: Fire Safety's My Job

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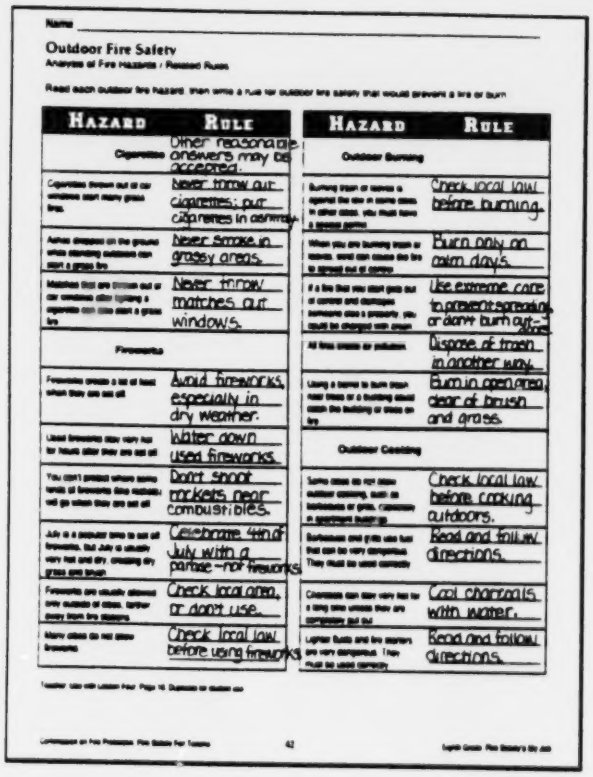
ANSWER KEY-3



Name _____

Outdoor Fire Safety

Analysis of Fire Hazards / Related Rules

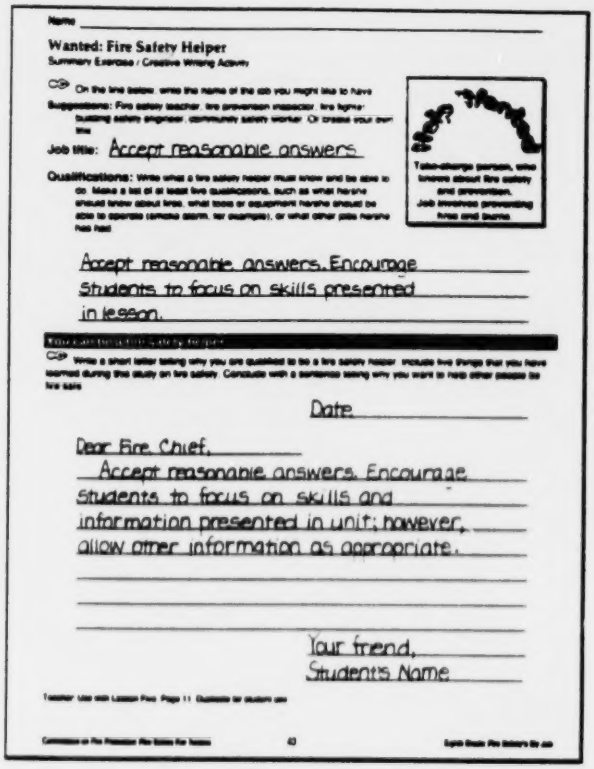
Read each outdoor fire hazard, then write a rule for outdoor fire safety that would prevent a fire or burn.

HAZARD	RULE
Cigarettes	Other reasonable answers may be accepted.
Cigarettes thrown out of car windows start many grass fires.	Never throw cigarettes out car windows.
Ashes dropped on the ground while standing outdoors can start a grass fire.	Never smoke in grassy areas.
Matches that are thrown out of car windows after lighting a cigarette can also start a grass fire.	Never throw matches out windows.
Fireworks	
Fireworks ignite a lot of fires when they are set off.	Avoid fireworks, especially in dry weather.
Used fireworks stay very hot for hours after they are set off.	Water down used fireworks.
You don't protect others when some kinds of fireworks (like rockets) will go when they are set off.	Don't shoot rockets near combustibles.
July is a popular time to set off fireworks. But July is usually very hot and dry, causing dry grass and brush.	Celebrate 4th of July with a parade --not fireworks.
Fireworks are usually allowed only outside of cities. Gather away from fire stations.	Check local laws, or don't use.
Many cities do not allow fireworks.	Check local law before using fireworks.

HAZARD	RULE
Outdoor Burning	
Burning trash or leaves is against the law in some cities. In other cities, you must have a special permit.	Check local law before burning.
When you are burning trash or leaves, wind can cause the fire to spread out of control.	Burn only on calm days.
If a fire that you start gets out of control and damages someone else's property, you could be charged with arson.	Use extreme care to prevent spreading or don't burn at all.
All fires create air pollution.	Dispose of trash in another way.
Using a flame to burn trash near trees or a building could cause the building or trees on fire.	Burn in open area clear of brush and grass.
Outdoor Cooking	
Some cities do not allow outdoor cooking, such as barbecues or grills, cigarettes in apartment buildings.	Check local law before cooking outdoors.
Barbecues and grills use fuel that can be very dangerous. They must be used correctly.	Read and follow directions.
Charcoals can stay hot for a long time unless they are completely put out.	Cool charcoals with water.
Lighter fluids and fire starters are very dangerous. They must be used correctly.	Read and follow directions.

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 42 Eighth Grade: Fire Safety's My Job



Name _____

Wanted: Fire Safety Helper

Summary Exercise / Creative Writing Activity

On the line below, write the name of the job you might like to have.

Suggestions: Fire safety teacher, fire prevention inspector, fire fighter, building safety engineer, community safety worker. Or create your own title.

Job title: Accept reasonable answers.

Qualifications: Write what a fire safety helper must know and be able to do. Make a list of at least two qualifications, such as what he/she should know about fires, what tools or equipment he/she should be able to operate (smoke alarm, for example), or what other jobs he/she has had.

Accept reasonable answers. Encourage students to focus on skills presented in lesson.

Your Job Description: Fire Safety Helper

Write a short letter telling why you are qualified to be a fire safety helper. Include five things that you have learned during this study on fire safety. Conclude with a sentence telling why you want to help other people be fire safe.

Date _____

Dear Fire Chief,

Accept reasonable answers. Encourage students to focus on skills and information presented in unit; however, allow other information as appropriate.

Your friend,
Students Name

Teacher: Use with Lesson Five, Page 11. Duplicate for student use.

Commission on Fire Protection: Fire Safety For Texans 43 Eighth Grade: Fire Safety's My Job

Student Materials — Duplicating Masters

Fire Safety Technical Manual

Name _____

Student Information And Activities On Fire Safety

Purpose: The purpose of a technical manual in business is to give workers special information they need to do their jobs. Many workers call their books "tech manuals."

This "Tech Manual" will teach you about fire safety in places outside your home. These places include the workplace and outdoors. This "Tech Manual" also includes information on the use of technical innovations to detect and put out fires.

During your study of fire safety, your class will pretend to be workers for the Fire Safety Learning Laboratory. Use this study as a chance to learn more about the kind of business in which you might work.

Background Information

Definitions: These words will be helpful in understanding fire safety.

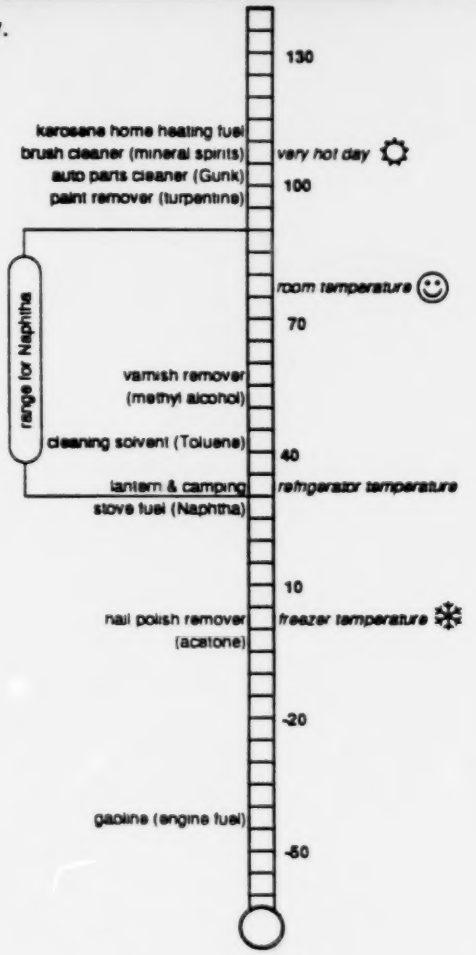
Fire: a chemical process that converts a fuel into other byproducts. This process requires heat, fuel and oxygen, plus the continuation of uninhibited chemical reactions. Also called combustion.

Flammable: something that will burn. Generally has the same meaning as combustible.

Flammable liquid: a special classification of liquids that are highly flammable or explosive. These liquids typically give off vapors that are explosive at relatively low temperatures.

Flash point: the temperature at which vapors from a flammable liquid can catch fire or explode.

➤ The chart at the right illustrates the flash point for several flammable liquids frequently stored in homes.



Teacher: Use with Lesson One, Page 7. Duplicate for student use.

Name _____

Factors in Ability To Burn

Background Information / Classification Activity

Many factors affect whether something will burn easily or whether it will be more difficult to burn. Two major factors are:

➤**Examples of resources that burn easily :**

plants, trees and grasses

wood and other plant products, such as cotton, paper, many fabrics, vegetable cooking oil, alcohol

petroleum-based products, such as gasoline, oil, many other flammable liquids, nylon and polyester

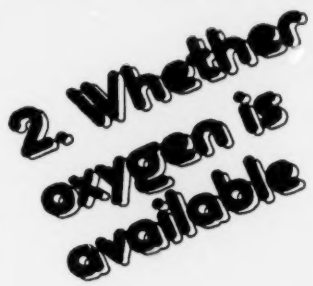
➤**Examples of resources that do not burn easily:**

metals and rocks

concrete, bricks and similar products

fabrics or wood that has been treated with a flame retardant chemical

Note: Leather and wool generally do not burn as easily as fabrics.



➤**The availability of oxygen is affected by how the item is made.**

Example: A tightly-worn cotton shirt allows less oxygen that a loosely-woven cotton shirt. Close-fitting clothes allow less oxygen than loose-fitting clothes.

➤**The availability of oxygen can be controlled by where the item is located.** *Example*: Oily rags, which might self-ignite, should be stored in a closed metal container. If a fire should start, the fire will quickly use up the oxygen and die.

Classification Activity

Look at the following list of items. Classify according to whether it would burn more easily or less easily. Then write each in the appropriate section of the table below.

Natural Resource

- forests
- grasslands
- petroleum
- rocks and barren soil

Buildings

- wood-frame house
- building built of steel and concrete

Clothes

- Loose, flowing lace gown
- close-fitting, tightly-woven cotton shirt
- flame-retardant pajamas

Burns more easily	Burns less easily

Bonus

On a separate sheet of paper, make a complete list of all items in this room or a room at home. Then make a copy of the table above and classify each item on your list.

After you complete your classification table, write a statement telling whether you think a fire might be likely to start in the room.

Teacher: Use with Lesson One, Page 7. Transfer to overhead transparency

Name _____

How Would It Burn?

Story Analysis Activity

Read each story, then answer the questions about fire safety in each situation.

The wildlands area includes forests and grasslands that are home to many birds and animals. Although the weather has been dry, many small animals and insects flourish. The summer days are long, and many people from the nearby town enjoy picnics in a small park on the edge of the forest.

The local fire department is concerned about fire in the wildlands. They are encouraging strict safety guidelines for a petroleum-based chemical storage building that is being built nearby.

List three flammable items from the story: _____

_____

What conditions or characteristics of the wildlands in this story make it easier to burn? _____

_____

The neighborhood has a blend of old and new buildings. Mrs. Harris lives in a 100-year-old frame house that is furnished with wooden antiques and needlework-upholstered furniture. Just down the block, the Garcia family recently built a brick home. They have enjoyed buying modern furniture — leather, brass and glass.

Everyone in the neighborhood was glad when a service station was built a few blocks away. The new building is built entirely of concrete blocks. It also has a small store and car wash.

Which one of the two houses would burn more easily?

_____

Why? _____

What characteristic of the new service station might keep a fire from starting? _____

_____

What characteristic of the service station might make a fire more likely? _____

_____

Name a flammable liquid that might be found at the service station: _____

What is the flash point of the flammable liquid you named? _____

The drama department's production of "The Night Before Christmas" requires many different types of costumes. Mark, who plays the father, will be wearing close-fitting, wool longjohns and a stocking cap. Mari plays the mother and wears a long, flowing gown and a long housecoat with billowing sleeves.

To be properly dressed as Santa Claus, Terence is renting a red suit with boots, hat and beard from a costume company. The company said all their costumes are treated with a flame-retardant chemical.

Of course, the students playing the children will wear regular children's pajamas, which are also flame retardant. A federal law says that all children's pajamas must be flame retardant.

Which costumes are less likely to catch fire? _____

_____

Why? _____

Which costumes are more flammable? _____

_____

Why? _____

How could the costumes be changed to make them safer? _____

Teacher: Use with Lesson One. Page 7. Duplicate for student use.

Name _____

Hazards In the Workplace

Background Information

The Occupational Health and Safety Act and other federal and state laws provide many safeguards that protect workers on the job. However, workers still face many fire hazards:

- Arson is the No. 1 cause of fires in many types of businesses.
- As in homes, carelessness and ignorance about fire hazards are also problems in the workplace. The fire hazards themselves may be different than fire hazards in the home.
- Industrial equipment, such as manufacturing equipment and commercial kitchen equipment, present unique fire and burn hazards.
- Many businesses and industries rely on a high use of electrical and electronic equipment. This increases the risk of electrical shock and the possibility of electrical or appliance fires and burns.
- The large amount of combustible materials, especially in stores and offices, increases the fire hazard for workers.

Sprinklers

How they work: Fire suppression sprinklers are individual spray heads tied into a system of water pipes. When the heat of a fire raises the temperature of a sprinkler head to a certain point (usually 165°F), that sprinkler will open and release water directly over the source of the heat. Different brands of sprinklers use different methods for opening the sprinkler. Some have a metal link that melts; others have small glass bulbs filled with liquid.

History of sprinklers: Sprinklers were invented in 1874 by an American named Henry S. Parmelee to protect his piano factory. During the first half of the 1900s, sprinklers were installed almost exclusively to protect buildings, especially warehouses and factories. Because sprinklers reduced the chance of fire destroying the building, insurance companies charged less to insure buildings with sprinklers. The lower cost of insurance helped companies pay for the cost of installing sprinklers.

During the last 20 years, building owners have installed sprinklers in more types of buildings, especially high-rise office buildings, hotels and apartments. Some cities and states adopted laws requiring sprinklers in certain types of buildings. During 1990, the U.S. Congress passed a law that requires hotels taller than three stories to have sprinklers.

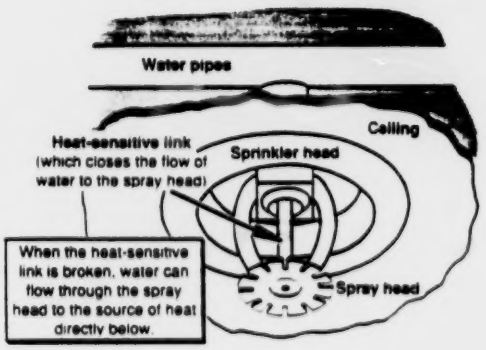
Why sprinklers are effective

Fire sprinklers are designed to contain the fire — to put it out or keep it from getting dangerously large until fire fighters arrive to spray additional water. Sprinkler systems are also connected to alarms to warn of the fire.

Each sprinkler protects its own area. The sprinkler sprays water only when the temperature in the immediate area is hot enough. Most fires in sprinklered buildings are handled by one or two sprinklers.

Sprinklers work automatically. They do not have to rely on people to notice the fire or hear an alarm and then remember how to turn on the system.

The Basic Parts And Operation Of A Sprinkler


Water pipes
Ceiling
Heat-sensitive link (which closes the flow of water to the spray head)
Sprinkler head
When the heat-sensitive link is broken, water can flow through the spray head to the source of heat directly below.
Spray head

Teacher: Use with Lesson Two, Page 8. Duplicate for student use.

Name _____

Hazards In the Workplace Continued

Selected Safety Guidelines

Many people use their cars while working or drive cars or trucks for a living. Follow this checklist to keep your auto fire safe.

Remember that gasoline is an explosive!

That's what makes it a good motor fuel when used safely. Gasoline produces a flammable vapor at low temperatures, and the vapors can burst into flame very easily. Treat gasoline with respect:

- ☑ Never use a match or carry a lit cigarette near gasoline, especially at a service station.
- ☑ Carry gasoline only in approved metal containers with a pressure-relief, self-sealing cap. Never put gasoline in plastic or glass containers.
- ☑ Never carry gasoline or an empty gasoline can in your car.
- ☑ Immediately clean or remove any item on which gasoline spills.

Keep the car or truck in good repair. Follow the manufacturer's recommended schedule for maintenance, such as oil changes, radiator fluid changes or tune ups.

Keep a fire extinguisher in the car or truck, and know how to use it. Keep a fire extinguisher near the driver's seat.

Remember that oil and other auto fluids are also combustible. Discard used products safely at an approved disposal site or recycler. Never pour these liquids on the ground or in the trash can. Not only does that create a fire hazard, it also harms the environment.

Be aware that any mechanical part of an auto or truck can burn you. Any part of the engine, accessories or exhaust system can cause second-degree or worse burns even from slight contact.

Many office employees work in high-rise buildings. Many people live in multi-story apartment buildings, and many of us have stayed in large hotels. All these people face special fire hazards. There are many more people; it takes longer to escape; and there are more combustible materials, such as carpet, furniture and supplies.

Here are some other guides for people who live and work in high-rise buildings:

Know where fire-exit stairways are located. Memorize at least two ways to each stairway. NEVER use the elevator in a fire emergency.

Know what the fire alarm sounds like, and respond as if there were a real fire every time you hear it. Never think it's just a false alarm.

Have fire emergency exit drills.

Tell the building owners to:

- ☑ check the alarm system regularly,
- ☑ keep fire exit stairways clear,
- ☑ have the building inspected,
- ☑ keep all electrical equipment and wiring working properly,
- ☑ have fire exit drills,
- ☑ maintain the fire suppression sprinkler system and
- ☑ mark all exits and dangerous areas, such as electrical rooms and chemical storage.

Be a safe worker by:

- ☑ disposing of all cigarettes and matches properly (always check ash trays and waste cans for smoldering materials),
- ☑ not plugging too many appliance into electrical outlets and

If you have a disability, make arrangements with co-workers and the building owner for help in emergencies. You should have a partner who can help you in an emergency.

Teacher: Use with Lesson Two, Page 8. Duplicate for student use.

Employees and customers encounter fire hazards in stores and offices. How can they be more fire safe?

Avoid actions that might cause fires in electrical wires or trash.

- ☑ Don't overload electrical circuits.
- ☑ Keep electrical equipment in good repair.
- ☑ Use precautions to prevent trash fires.

Be aware that automobile-related businesses usually contain fire hazards, especially gasoline or other flammable liquids. These businesses include body paint shops, repair shops, auto dealerships, service stations, car washes and accessory shops. **NO SMOKING**, and observe other safety measures.

Recognize that supermarkets, department stores, variety stores -- in fact, any store -- have large quantities of combustible material. Don't smoke in stores, and be cautious with flammable materials.

Arson is the most frequent cause of commercial fires. Because fire damage affects the entire business, all employees should be concerned with preventing arson. These tips could help your business:

Reduce opportunities for deliberately set fires. Be sure that:

- ☑ All exterior areas are well lit and all entrances are secure.
- ☑ Smoke or fire detectors and sprinklers are installed to quickly detect and control fires that might occur.
- ☑ Flammable and hazardous materials are stored properly, in locked cabinets if necessary.
- ☑ Many fires are set to cover up other crimes, such as burglary. Reducing the opportunity for those crimes reduces your risk of arson too.

Identify possible firesetters. Be aware of unhappy employees or competitors.

Don't use fire insurance to solve financial problems. Some business owners set their businesses on fire to collect insurance money.

Many people are employed in garages and workshops. Here are some guidelines for their safety:

Store flammable liquids in approved metal containers. Look for the label of a testing laboratory, such as UL.

Know what products in the garage are flammable. USE ONLY FOR THEIR INTENDED PURPOSE. Read and follow all labels! **Never use gasoline as a cleaning fluid or fire starter.**

Never use or store flammable liquids inside the garage or in any closed-in area.

When priming a carburetor with gasoline, do not spill gasoline on hot engine parts.

Dispose of used flammable liquids properly. Don't save used oil, cleaner fluids, etc., and never pour on the ground. Discard only in approved disposal locations.

Use caution with any materials that are soiled by flammable liquids. Keep oily rags and clothes away from any heat source, especially cigarettes and hot engine parts. Because oily rags can catch fire without any other heat, store them in metal containers with tight-fitting lids. Better yet, clean or discard all oily rags.

Wear long sleeves and pants when near a hot engine or exhaust parts. This will reduce possible exposure. The slightest touch can result in a serious burn.

Use all power tools properly. Keep away from water to avoid electrical shock.

Operate gas-powered lawn mowers and other tools properly. Never refuel a hot engine! Wait until the engine cools before adding gasoline.

Keep the garage clean and organized. This reduces the opportunity for combustible items, such as paper, rags and trash, from contacting heat sources. **And keep a fire extinguisher, preferably Class ABC or ABCD, readily available.**

The equipment and materials in many businesses present many hazards. Here are some guidelines for industrial and commercial workers:

Watch electrical equipment, power lines and wiring carefully. Problems with electrical wiring or equipment are a leading cause of commercial fires. Watch for damaged wiring. Don't overload circuits.

Maintain all equipment properly. Follow manufacturers' guidelines to operate, maintain and repair equipment. This will reduce the risk of fire from break-downs.

Be VERY careful with heat sources, such as welding and cutting torches, hot equipment and discarded cigarettes and matches. Always be aware of nearby combustible materials, and clear the area before you handle a potential heat source. Follow employer guidelines.

Be careful with all flammable liquids, especially gasoline, paint and solvents. Store them in the proper containers. Use airtight metal cabinets, and lock the cabinets if necessary. Be sure all fueling equipment, such as gasoline pumps, is in good condition.

Name _____

Be On Guard

Analysis Of Fire Hazards In The Workplace

One of the following sections will be assigned to your group. Read the Safety Guidelines section of "Hazards In The Workplace" assigned to your group. Based on that information and other information in this lesson, list five fire hazards that are found in the workplace. During reports from other groups, complete the remaining sections.

Arson

1. _____
2. _____
3. _____
4. _____
5. _____

High-Rise Buildings

1. _____
2. _____
3. _____
4. _____
5. _____

Garages And Workshops

1. _____
2. _____
3. _____
4. _____
5. _____

Stores And Offices

1. _____
2. _____
3. _____
4. _____
5. _____

Autos And Trucks

1. _____
2. _____
3. _____
4. _____
5. _____

Industrial Plants

1. _____
2. _____
3. _____
4. _____
5. _____

Discussion: After completing your list, discuss how fire suppression sprinklers can be an important part of fire safety in businesses and homes.

Teacher: Use with Lesson Two, Page 8. Duplicate for student use.

Name _____

My Own Business

Creative Analysis Activity

You have been given a special job — create your own division of the class's Fire Safety Learning Laboratory. Your division can be any kind of business you would like, so use your imagination. Ideas: specialty store, hair stylist, auto repair shop, computer service, television producer, traveling sales representative.

Decide which one of the categories described in "Hazards In The Workplace" that your business matches best. You may use that information to complete this activity.

The NAME of my business is _____

The PURPOSE of my business is to _____
(tell what your business does, who might use your business, etc.)

Where my business might be LOCATED _____
(mall, own building, operated from a truck, etc.)

MY JOB in my business is _____

The NUMBER OF PEOPLE who might be working in my business _____

The TYPE OF WORK my workers would be doing _____

What would I tell my workers about FIRE SAFETY at my business _____

_____

List five FIRE HAZARDS with which you might be concerned:

① _____

② _____

③ _____

④ _____

⑤ _____

Write a sentence describing how fire suppression sprinklers would be needed at your place of business:

_____

_____

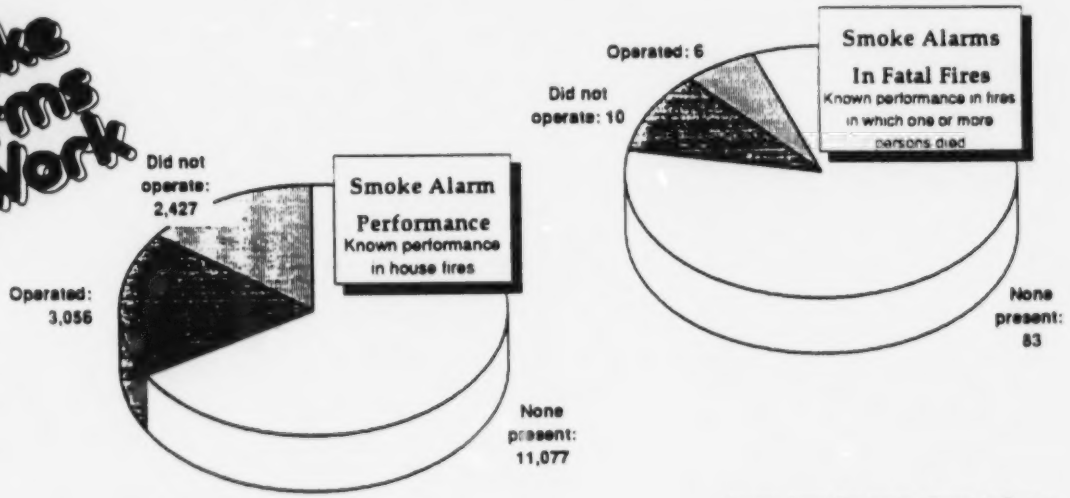
Teacher: Use with Lesson Two, Page 8. Duplicate for student use.

Name _____

Smoke Alarms At Work / How Smoke Alarms Work

Background Information

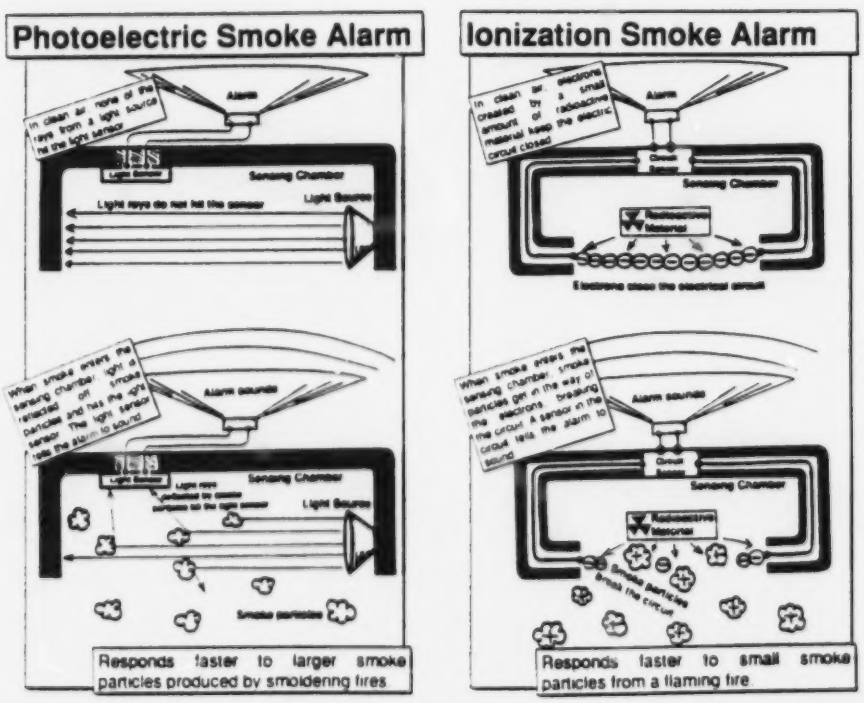
Smoke Alarms At Work


Smoke Alarm Performance
Known performance in house fires
Did not operate: 2,427
Operated: 3,056
None present: 11,077
Smoke Alarms In Fatal Fires
Known performance in fires in which one or more persons died
Operated: 6
Did not operate: 10
None present: 83

Source: Texas Fire Incident Reporting System

How Smoke Alarms Work

Both types of smoke alarms need electricity to operate. They may use batteries or may be directly connected to the building's electrical wiring (called "hard-wired").



Teacher: Use with Lesson Three, Page 9. Duplicate for student use.

BEST COPY AVAILABLE

Name _____

Smoke Alarms On Guard

Helping Smoke Alarms Do Their Job

- ☑ Place at least one smoke alarm **on each level (story)** of the building.
- ☑ Place a smoke alarm **outside each sleeping area.**
- ☑ If your family sleeps with bedroom doors closed, place a smoke alarm in each bedroom.
- ☑ **Test each smoke alarm once a month.** (Match to an important date, such as pay day or the day the electric bill arrives.)
- ☑ **Change the batteries once a year.** Suggested dates: daylight savings time clock change, birthday, anniversary of alarm installation or moving.
- ☑ For the best warning system, have alarm smoke alarms interconnected so that if one sounds, they all sound. Have the alarms wired to house wiring, with backup batteries.

Fire experts say that having a *working* smoke alarm *triples* your chances of surviving a fire.

Alike or Different

Smoke alarms come in a variety of options. Match the description to the type.

1. Good early warning for smoke and fires	A. battery-operated B. hard-wired C. both
2. Should be tested once a month	A. battery-operated B. hard-wired C. both
3. More effective at detecting smoke from flaming fire	A. photoelectric B. ionization C. both
4. More effective at detecting smoldering fires	A. photoelectric B. ionization C. both
5. Should be placed outside sleeping areas	A. photoelectric B. ionization C. both
6. Uses a small light sensor	A. photoelectric B. ionization C. both
7. Uses a small radioactive cell	A. photoelectric B. ionization C. both

Teacher: Use with Lesson Three. Page 9. Duplicate for student use.

Name _____

Home Smoke Alarm Survey

Investigation And Research Activity

Draw a map of your home. Draw a blackened circle to show the location of each smoke alarm. If needed, draw an open circle where other smoke alarms should be located.

Check each smoke alarm using the steps in the table below.

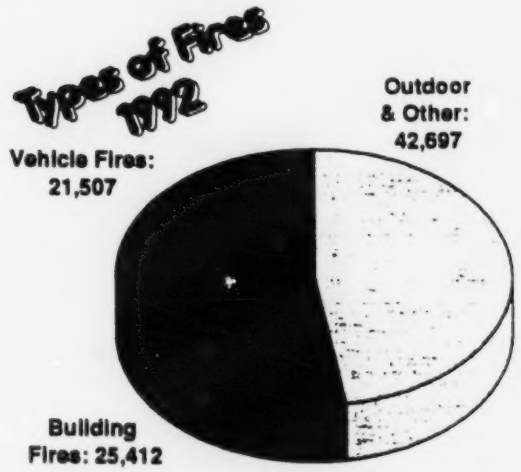
Location	Test by pressing test button	Did the alarm sound?	If the alarm did not work, were the batteries changed?	Test again. If the alarm still does not sound, the smoke alarm should be replaced.
1.	**Check when done**	**Circle one:** Yes No	**Circle one:** Alarm sounded Batteries were changed Batteries were not changed	**Circle one:** Alarm sounded after changing batteries Should be replaced because alarm did not sound
2.	**Check when done**	**Circle one:** Yes No	**Circle one:** Alarm sounded Batteries were changed Batteries were not changed	**Circle one:** Alarm sounded after changing batteries Should be replaced because alarm did not sound
3.	**Check when done**	**Circle one:** Yes No	**Circle one:** Alarm sounded Batteries were changed Batteries were not changed	**Circle one:** Alarm sounded after changing batteries Should be replaced because alarm did not sound

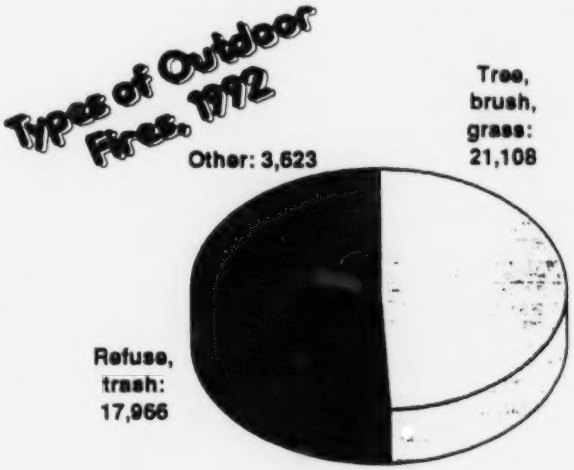
Teacher: Use with Lesson Three, Page 9. Duplicate for student use.

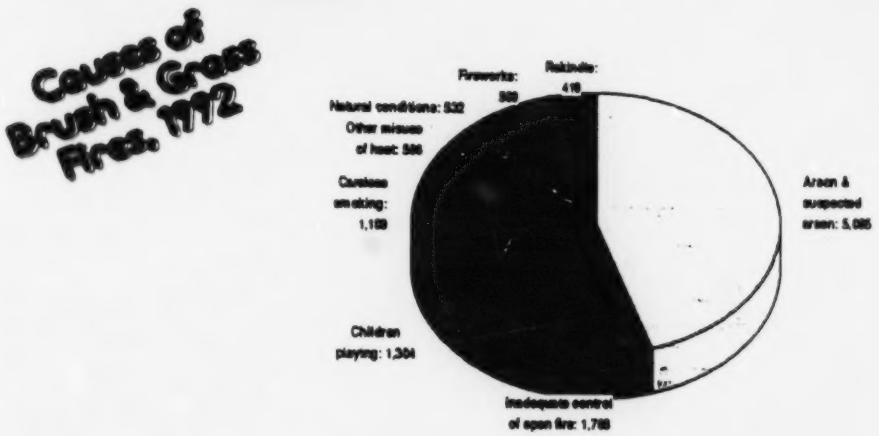
Name _____

Outdoor Fires

Analysis Of Statistical Information







Look at the graphs above, and answer the following questions:

1. What type of fire occurred most often during 1992? _____

2. What were the two most common types of outdoor fires? _____

3. What caused the largest number of brush and grass fires? How many fires? _____

4. List the next three most common causes of brush and grass fires: _____

5.. How many brush and grass fires were caused by careless smoking? _____

... by fireworks? _____ ... by natural conditions? _____

6. How many brush and grass fires were caused by human actions? _____

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

Name _____

Outdoor Fire Safety

Analysis of Fire Hazards / Related Rules

Read each outdoor fire hazard, then write a rule for outdoor fire safety that would prevent a fire or burn.

HAZARD	RULE
Cigarettes	
Cigarettes thrown out of car windows start many grass fires.	
Ashes dropped on the ground while standing outdoors can start a grass fire.	
Matches that are thrown out of car windows after lighting a cigarette can also start a grass fire.	
Fireworks	
Fireworks create a lot of heat when they are set off.	
Used fireworks stay very hot for hours after they are set off.	
You can't predict where some kinds of fireworks (like rockets) will go when they are set off.	
July is a popular time to set off fireworks, but July is usually very hot and dry, creating dry grass and brush.	
Fireworks are usually allowed only outside of cities, farther away from fire stations.	
Many cities do not allow fireworks.	

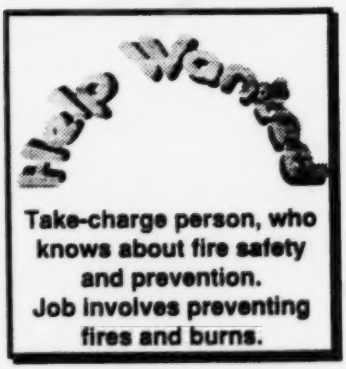
HAZARD	RULE
Outdoor Burning	
Burning trash or leaves is against the law in some cities. In other cities, you must have a special permit.	
When you are burning trash or leaves, wind can cause the fire to spread out of control.	
If a fire that you start gets out of control and damages someone else's property, you could be charged with arson.	
All fires create air pollution.	
Using a barrel to burn trash near trees or a building could catch the building or trees on fire.	
Outdoor Cooking	
Some cities do not allow outdoor cooking, such as barbecues or grills, especially in apartment buildings.	
Barbecues and grills use fuel that can be very dangerous. They must be used correctly.	
Charcoals can stay very hot for a long time unless they are completely put out.	
Lighter fluids and fire starters are very dangerous. They must be used correctly.	

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

Name _____

Wanted: Fire Safety Helper

Summary Exercise / Creative Writing Activity



On the line below, write the name of the job you might like to have.

Suggestions: Fire safety teacher, fire prevention inspector, fire fighter, building safety engineer, community safety worker. Or create your own title.

Job title: _____

Qualifications: Write what a fire safety helper must know and be able to do. Make a list of at least five qualifications, such as what he/she should know about fires, what tools or equipment he/she should be able to operate (smoke alarm, for example), or what other jobs he/she has had.

_____

_____

_____

You can be a fire safety helper.

Write a short letter telling why you are qualified to be a fire safety helper. Include five things that you have learned during this study on fire safety. Conclude with a sentence telling why you want to help other people be fire safe.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Teacher: Use with Lesson Five, Page 11. Duplicate for student use.